Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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With the Editor

RETURNING from lunch a few days ago, I found a young man waiting to see me. He was a lumber salesman—the local representative of a large concern that manufactures and sells yellow pine.

"I have a customer," he declared—"a card table manufacturer—who is using large quantities of our stock in machine-run, narrow widths and short lengths, taking a lot of material that our mills are glad to work up and sell. This customer sands the exposed surfaces and finishes the wood rims and legs of his tables in three coats of black pyroxylin lacquer, including the first coat. Everything is satisfactory excepting that on some of the flat grain pine the grain raises after the first coat is applied.

"He insists on avoiding the expense of sanding between coats, but he objects to the roughness which continues out to the finish coat on the flat grain pieces. Acting upon the advice of certain 'experts', he blames the lumber and threatens to switch to birch, even though it costs considerably more. I want to save this business, but to do so I must offer a satisfactory solution for my customer's trouble. We can furnish good quality lumber, properly dried and machined, but if our customer's finishing materials or methods are not suited to our wood, we will lose the business."

This in itself is a small affair, but it is one of many similar incidents which illustrate a condition that is of tremendous importance to several industries and to all progressive individuals and firms in those industries. Among other things, it is another reminder of the new competition—the competition of one material or class of materials against another; of one manufacturing process against another; of one type of equipment against another, and of the service and information of one industry or branch of an industry, as against another.

Formerly this lumber salesman and his company were probably unconcerned about finishes. They knew all about their own product—as far as it went "in the white." Formerly, that was enough, but today it isn't. They must know how to service their product, and upon their servicing ability will depend their volume of future sales; and without sustained sales, where is the element of profit in business? Servicing—and the information that goes with intelligent servicing—is becoming a powerful factor in the modern merchandising of materials and equipment.

The time has arrived when the manufacturers and sales organizations behind every kind of wood, metal and other material adapted to finishing, must know something about suitable finishing materials and processes for their products, so they can assure their customers complete satisfaction not only "in the white," but "in the finish." They must have servicing information available for their present and prospective customers if they expect a sustained volume of profitable sales.

Here is an opportunity for future co-operation between manufacturers and merchandisers of lumber, metals and composition materials on the one hand, and finish manufacturers on the other hand. Through this mutual co-operation, it will be possible to present the user of raw materials with specific information on what combinations of wood and finish, metal and finish, etc., will produce certain results. He will then be prepared to consider more intelligently the merits of what he buys and balance them against the elements of cost permissible for certain desired results. Then there will be less discrimination against certain materials on account of ignorance of their characteristics and possibilities.

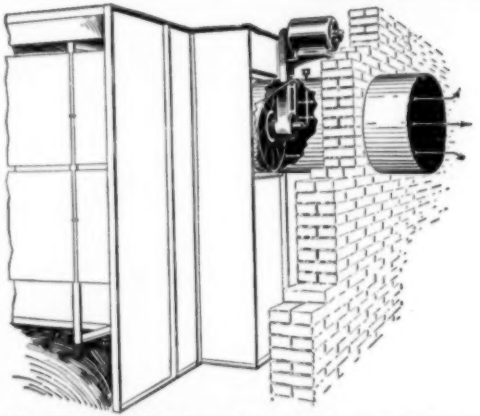
Some progress has already occurred along these lines, but more is needed. It will ultimately increase the profit and prestige of all concerns who take this forward step, and it will result in increased satisfaction to the users of finishing materials, equipment and supplies.

W. H. Rohr

Managing Editor

What it means to you

to use DeVilbiss spray-finishing equipment



DeVilbiss Spray Booths are easily installed at the best point in the finishing room, considering convenience and lighting conditions...Exhausting is done from back, top, or either side (here illustrated) through the shortest possible outlet pipe.

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For years DeVilbiss equipment and organization have been outstanding in character and completeness of service rendered to the entire industrial field. This service has been profitably utilized in every size of finishing room, using every kind of finishing material on every size and grade of product.... These years of extensive experience are combined with today's greatly enlarged and unequaled DeVilbiss engineering and manufacturing facilities in serving you.

Consider the full value of such experience and production facilities to you.... DeVilbiss spray-finishing equipment enables you, with absolute certainty, to do an improved quality of work—to do faster work—to have the best possible working equipment and working conditions—to have better satisfied workmen.

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"With increasing competition in all lines, it is probable that more and more flat finishes will be used."—

S. P. Wilson

Flat Varnishes and Lacquers

Lacquer expert and authority calls attention to the characteristics, merits and uses of flat varnishes and flat lacquers, which are being used to some extent to produce a dull-rubbed finish effect

By S. P. Wilson

IN THE last few years more and more finishers have been investigating the cause of flat varnishes and lacquers to replace rubbed finishes. Many of them have adopted this type of material; others, who have had unfortunate experiences with the material, are still skeptical. The saving in rubbing costs is quite appreciable and when good material is used, the quality of finish is high enough for most work.

Flat Varnishes

Flat varnishes are obtained in a variety of ways. Some makers add waxes, or the stearates and palmitates of zinc, magnesium or aluminum to ordinary rubbing varnishes. These are either ground into the varnish on mills, or first dissolved to a jelly in turpentine or naphtha, and this is added to the varnish. Other makers, by careful choice of gums and resins, are able to make a very high-grade flat varnish without the addition of any flattening pigments.

Commercial flat varnishes differ widely in quality. Some are rubbery or cheesy; they are far from being waterproof and are easily marred. Others are as tough as good gloss varnishes—waterproof and durable. Almost all have a tendency to settle out on standing, although those that are made without the addition of waxes or pigments are naturally less liable to this than the others.

All flat varnishes should be well stirred before using. The best and smoothest finishes are obtained if they are of low viscosity and good flowing quality. A good flat varnish will dry hard in about 14 hours under normal drying conditions, but many are sold that take far longer; in fact, some seem never to dry really hard.

Variety in Flat Lacquers

Flat lacquers are finding a rapidly increasing market, not only on low-priced work but also on some pianos and other high-grade cabinet work. Here also, products of a wide variety exist and are sold. Stearates are widely used, but better pigments have been found and flat lacquers are available today that are hard, tough, clear and smooth-flowing, so that surfaces sprayed therewith have almost exactly the appearance of a rubbed job.

There is no standard sheen of flat lacquer, apparently, and almost every user has his own idea as to the luster he wishes. Many of them mix flat and gloss lacquers to obtain this sheen; others

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Spray-finishing System

arrange with their suppliers to give what they wish.

Finishing Systems

Finishing systems with flat lacquers also vary greatly. A coat of substitute shellac, followed by one of flat lacquer is about the cheapest. A good system, much in vogue, consists of stain, filler, one or two coats of gloss lacquer, and a coat of flat lacquer. On tops of cabinets, the final flat lacquer coat is often given a light rubbing to remove nibs and to make these outstanding panels more attractive.

On turned and carved wooden legs and ornaments, as well as on composition substitutes, flat lacquers and varnishes are widely used without rubbing at all. It may be said here that not all flat lacquers will stand even this light rubbing.

With the modern improvements in high-grade wood lacquers and varnishes, there seems no reason for a finisher hesitating to try them on work where economy seems essential, and where the quality of finish obtainable with them might be satisfactory. Experiences of a year or two ago are no criterion of what can be done today.

Variety of Uses

Another use of flat lacquer is in connection with lacquer enamel and crackle finishes. As is well known, different colors in lacquer enamels have different degrees of gloss and, to secure a uniform satin finish, many users spray a final topcoat of almost colorless flat lacquer over the colors. If decal., transfers are used, this serves also to protect them. Of course, if a very glossy finish is desired, the gloss lacquers must be used.

On metal work, grained to imitate wood, flat lacquers are being used over the graining ink with some success, although specially-formulated lacquers seem to be needed for this work. Metal beds, office furniture, radiator covers, etc., are all possibilities where this type of material may be of service.

Lacquer Used to Finish Skyscraper Trim

Two more new office buildings in San Francisco—the 22-story Hunter-Dulin Building and the 15-story Insurance Center Building—have been finished inside with modern nitro-cellulose lacquer. The first building to be finished in lacquer was the 26-story Coast Division Building of the Pacific Telephone and Telegraph Co., which was described in March, 1926, issue of INDUSTRIAL FINISHING.

According to a statement of the architects, "the nitro-cellulose used in the Telephone Building, after two years' continuous building service, retains its original quality and luster. It shows no defects, and apparently no signs of wear."

Because of the widespread interest in lacquer, and because of the limited amount of lacquer work completed so far in the building industry, a special motion picture reel has been produced, which shows the actual application of lacquer by air brush in the 22-story Hunter-Dulin Building.

This picture portrays in a graphic and concise way just how lacquer is applied under building working conditions. With this picture the local finishers, A. Quandt & Sons, are prepared to

show the architect, engineer, contractor, building owner or manager, and others interested, the merits of a quality nitro-cellulose lacquer finish.

This film is now available to any architect preparing specifications for a new building, and who may not have the opportunity to visit either of the abovementioned jobs, and who desires practical information.

The chief reasons for using a sprayed lacquer finish for the interiors of these large buildings, are emphasized in a statement by the architects, as follows: "The great speed in application by air brush and quick drying qualities of the nitro-cellulose lacquer used so successfully in the Hunter-Dulin Building resulted in the earliest completion and occupancy of this entire building many days sooner than would have been possible with any other finish. Because of this greater saving of time, durability and beauty of finish, it is my opinion that lacquer will inevitably be adopted in the architectural field."—News.

A New Decorative Material

A recent development in finishing, that is attracting considerable interest among furniture manufacturers, is the use of a plastic oil-paint which is stippled in various designs upon the surface of the furniture.

It has the finished appearance of water putty, yet is an all-oil product, is easily worked, takes any colors perfectly and dries absolutely hard. Its use, so far, has apparently been restricted to smoking stands, magazine racks and the smaller items of furniture, but the great number of textures and designs possible with this material will probably soon extend its use.

This material is an entirely different proposition than the plastic preparations, which are in such universal use now among art stores, etc., being much lower in cost and more of a manufacturing than a home-decorating proposition. Several of the larger manufacturers are marketing this material at this time, particularly for use on walls of apartment houses and theatres.—Californian.

The difference between industrial success and industrial failure is many times found in the wasteful processes which often attend industrial operations.

Air Compressors Shown in New Curtis Catalog

Curtis Pneumatic Machinery Co., St. Louis, Mo., has issued a new and attractive catalog of 16 pages, which includes descriptions, illustrations and specifications of air compressors for paint spraying, tire inflation and other shop uses; also, car washers, air stands, rotating auto lifts, and various accessories for this equipment. The catalog is devoted to "Curtis Service Station Equipment," and it bears this title on the front cover.

Changes in du Pont's P., L. & C. Department

Important changes have just been announced by E. I. du Pont de Nemours & Co. in regard to the personnel of the Paint, Lacquer & Chemicals Department. William P. Allen, general manager of the department, has been relieved of his duties at his own request and has been granted a leave of absence for one year beginning November 1, 1927.

William Richter has been appointed general manager of the department. J. W. Elms, now divisional manager at Philadelphia, has been appointed assistant general manager. William M. Zinti, heretofore sales director of the paint and varnish division at Philadelphia, has been appointed divisional manager to succeed Mr. Elms. These promotions are all to take effect November 1, 1927.

Lacquering Tea Room Furniture

Relating an experience in a small furniture factory, where excessive labor costs prevailed until materials and methods were brought completely up-to-date; also emphasizing the merits of a balanced finish

By Donald A. Hampson

RECENT conversation with the foreman of a small furniture shop brought out a point that many of us know, and that more should know. Salesmen harp on the same thing, but their hearers do not take their advice as seriously as when they hear it from one of their fellow workmen, unfortunate though such an attitude may be.

This particular foreman was speaking of the brilliant colors used for tea-room furniture, and of the comparative ease with which furniture may be finished to produce these effects.

Excessive Sanding

"When I came here," he said, "four men were sanding all the time. That is a large number, taking into consideration the relatively small output of the shop. It was the most expensive part of the whole manufacturing process. These fellows were all sanding for dear life, to smooth down the grain raised by the filler coat that had been sprayed on.

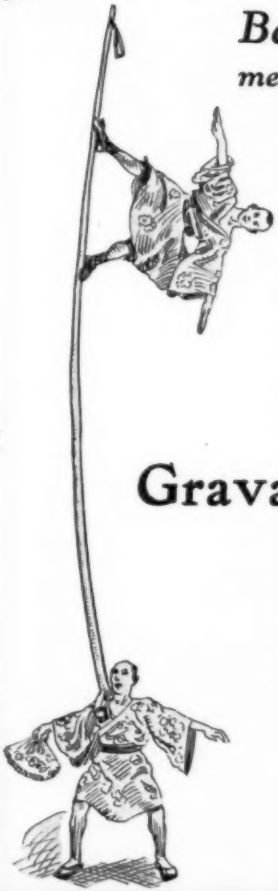
"The purpose of a filler is to fill up or close the grain. Back in the paint-and-varnish days we expected to raise considerable grain as we filled, and sanding was the only way we had to overcome the deleterious effects. Why, there are plenty of men in the business today with bulbous finger tips, induced by an excessive amount of sanding in their youth. Sanding being a disagreeable job, certain lads were kept at it for years before they got a chance to wield a brush.

Improved Undercoats

"Up to the advent of lacquers, we accepted sanding as a necessary evil. But, in making a success of their lacquer finishes, the lacquer people found that they would have to improve the undercoats in order to win users over to their side. The result was the development of a lacquer filler that raises the grain very little.

"I found an amusing situation here. They had shifted over to a lacquer finish, but were still using their old fillers—because they were cheaper in first cost, as near as I could find out. When the lacquer man tried to induce them to buy his fillers, they thought he was aiming to

balanced



Balanced Finishing means Steady Selling

BALANCED finishing embraces a number of important considerations in the sales appeal of your products.

Balanced finishing, as conceived by the Wood Finishing Engineers of our Studio Service, includes all processes from the time your furniture is in "the white" to the end that they will sell easily and quickly. Write us about this Studio Service.

Gravarco Products

Gravarco Products are balanced correctly. Properly applied and properly combined they give you the ultimate in wood finishing. This fact is borne out by the increasing number of users of Gravarco Products—users who manufacture a tremendous volume of high and medium grade furniture.

Grand Rapids Varnish Corporation

Main Office, Factory and Studios
GRAND RAPIDS: MICH.

Los Angeles
Jamestown, N. Y.
Chicago
High Point, N. C.

make a 'good thing' out of them. As a result, they put on a varnish filler, spent three times the extra first cost in sanding, and they did not have as good a final coat as they should have obtained.

Improved Results

"Now, we are using a lacquer undercoat. We find that one man can do all the sanding easily. We put on lacquer color coats and we get all there is to get in the way of looks, time saving and quick drying."

The practice detailed by this man is quite typical. We are prone to half-do things. And we are a little too ready to believe that everything a salesman advises is a move to sell more goods.

As a matter of fact, the companies behind many of these traveling men have spent vast sums in experiments and development along particular lines—far more and better than any individual could do. This information is passed on by salesmen and it is worthy of consideration. It is better and cheaper to stick to old ways than to mix the old and the new in ways that are conflicting, antagonistic and unbalanced.

Varnish Brushes Versus Lacquer Brushes

The great care that is required in giving proper attention to varnish brushes in use has, in a large measure, been removed, since brushing lacquers have become a recognized staple on the market today. Where formerly a great many brushes were used for varied purposes, with the advent of brushing lacquer, fewer brushes can be used. They are readily washed out and are more easily cared for than brushes used in varnish.

Brush lacquers have created a specific demand for special brushes. These requirements in production are a long-stock, full-bodied, soft-hair, oval brush, set in a cement that will withstand solvents of lacquer and insure against the loss of bristles, as this alone may ruin a perfect flow of brush lacquer. These lacquer brushes, when properly broken in, do give perfect service.

Unlike the varnish brush, which must be kept in a keeper with the proper preservative, and carefully looked after to see that all bristles do remain covered and moist, the lacquer brush frees one from this careful attention. All that is required is a rinsing in lacquer thinner and laying aside the brush until it is needed again. With a varnish brush, this is impractical, since the rinsing would be insufficient, as it would have to be thoroughly washed and worked out to insure cleanliness, and then stored away in a dust-proof container to await future use.

The lacquer brush, even with a careless cleaning out, seals itself against any atmospheric dust and when it is again placed in lacquer it softens readily and is clean for use without further attention.—Edward C. H. Rottmann.

Industrial Oven Bulletin

The Thermo Electric Instrument Co., Newark, N. J., has issued a new 4-page bulletin which illustrates and describes Freas industrial, automatically controlled electric ovens for use in baked finishing processes.

Pipes in factories should be painted with identifying colors or otherwise marked so that it is easy to distinguish them, especially in an emergency.

SPRUANCE QUALITY

Q-E-D

QUICK ELASTIC DURABLE

FURNITURE LACQUER

9003 FURNITURE LACQUER. Highest Building Quality, Tough, Elastic, Durable, Easily Rubbed, Accurately Thinned, Ready for Use.

9013 FLAT FURNITURE LACQUER. Same high qualities as 9003, but gives a fine rubbed finished effect which eliminates rubbing.

Quick drying, tough and durable. Clear and colored.

Tested, Used, Recommended—by Leading Furniture Manufacturers.

THE GILBERT SPRUANCE CO.
PHILADELPHIA

"A FINISH FOR EVERY PURPOSE"

"I have stood in a finishing room, for instance, while a sample batch of lacquer, submitted by a manufacturer was condemned through no fault of the lacquer itself, but because of a polluted air supply from a slovenly-designed and maintained compressing outfit. For this reason, I earnestly believe, that the next improvements in finishes should be made by eliminating so many chances for the inadvertent or 'mysterious' spoiling of a good job. Much of the erratic behavior of lacquers is due to polluted air."—

R. B. Prentice

Compressed Air and Its Distribution

Presenting added facts and recommendations in regard to the use of compressed air in finishing departments, and the installation of suitable equipment for furnishing compressed air in modern factories

By R. B. Prentice

CONTINUING from last month's article, let us now consider a proper compressed air installation and outline the reasons for our choice of method and equipment.

Having determined the most economical motor for the compressor, the next consideration is type of compressor—whether air or water-cooled, horizontal or vertical, high or slow speed.

Water-Cooled Compressor

A water-cooled compressor, that is for continuous duty, has advantages over the air-cooled machine which may be summed up as follows: Air cooling pre-supposes a relatively high, cylinder-wall temperature to provide for radiation of the generated heat; the effect of this is to make for much slower cooling of the air being compressed than is the case where the cylinder wall is cool; the practical result of which is to lower the efficiency of the compressor relative to power consumed.

The uncertainty of the maximum temperatures to which the cylinder walls may rise, when an air-cooled machine is put into service, prevents the manufacturer from keeping the piston clearance at a better minimum; and piston clearance is a vital factor in the volumetric efficiency of a compressor. The temparature of compressed air from an air-cooled machine being higher, the likelihood of the moisture being carried far into the system before being precipitated is greater. However, the ideal selection must often be sacrificed to price, and is allowable where a very small quantity of air is required, or where extreme portability is of greater importance.

Air cooling prescribes limits of cylinder diameters beyond which air cooling becomes very bad practice. The water cooled machines, on the other hand, may be made in generous sizes and for operating speeds that are much higher than the air-cooled machines, so in anything larger than a size of 3 x 3½-in. (piston displacement) the advantage is all on the side

of the water-cooled machine, especially so for the stationary installation.

Lubrication of Compressor

The ease with which automatic oiling of the vertical type machines is accomplished is a feature of great value and perhaps an overshadowing advantage, except in large size machines where the manual or otherwise than gravity-actuated, automatic oiling systems may be conveniently controlled within the safe maximum allowances. In these large sizes, horizontal construction permits of more satisfactory mounting.

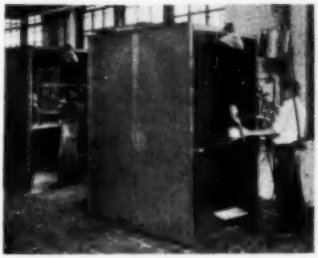
The oiling system of a compressor, intended to supply air for finishing, should be especially designed for this class of work, as it goes without saying that lubricating oil in finishes is fatal.

As between the high and low-speed machines, the life of the compressor seems to be inversely proportional to its speed of operation. The low-speed installation provides for increased future capacity which is almost certain to be required, and it operates more efficiently. In comparing prices of machines, one should not lose sight of the fact that comparisons should be made with reference to piston displacements rather than guaranteed output. If one is satisfied to wear out his machine in one year, he may get the same output as one twice as big that will last two years.

So, we shall select a water-cooled machine of the low speed, vertical type.

Air Receiver

Ordinarily a receiver would be the next consideration, but in this case we shall not follow the custom of habit, but instead inquire into the merits of any receiver at all. The question arises: "What is a receiver for, anyway?" Just how the air receiver came to be such a generous-sized piece of equipment is a matter of mystery; its real utility is surprisingly little, and unless we may dignify it with genuine utility as a justifiable auxiliary to which to attach several incidental fittings, some of which are made necessary by its presence, the receiver will constitute a very insignificant part of this compressed air system.



One of compressed air's most useful functions—supplying the kind of force needed for spraying finishes rapidly and economically.

Further than removing the pulsations from the air stream, the air receiver has no place in the system designed for continuous use; and for this purpose a surprisingly small piece of large diameter pipe serves excellently. This may be made up of a coil of pipe of one or two sizes larger than the compressor outlet, coupled up closely to the compressor at the top and with a drip pocket of liberal size at the bottom, from which the riser should conduct the air to the highest point in the system. The pressure gauge, safety valve and governor connection can be conveniently attached to the coil.

A governor of the type that operates to choke off the com-

pressor inlet, is a very satisfactory one that has stood the test of time and constant use as well.

When air is compressed, it becomes heated to such a degree as to offset the tendency toward precipitation of its moisture content caused by the compression itself. The capacity of air for water doubles with each rise of approximately 20 degrees in temperature, while its capacity for water is reduced merely in proportion to the compression, from which it will be seen that precipitation of moisture does not begin to occur until the compressed air has cooled.

It would also seem good practice to help the cooling effect after compression by eliminating the big receiver and using the radiating coil, as suggested above. This radiation of the heat of compression provides for a maximum precipitation of water and oil at once and in greater quantity than is possible by the use of the conventional receiver.

Pipe Drainage

As the air flows upward through a very liberal size vertical riser to the highest point in the system, an unusually great amount of condensation will be thrown out of the air stream which should be collected just beyond the elbow through which the air stream turns to be conducted horizontally —the point of lowest temperature and minimum moisture content. From this point to each point of consumption, the pipe line should be carefully graded downward and provided with drip pockets and blow-off valves just before use in the machines.

This drainage of the pipes should have careful attention, so that there will be no opportunity for the accumulation of "slugs" of water and oil that are bound to be expelled sooner or later with disastrous results to the finish of some particular job, or to a rubbing machine.

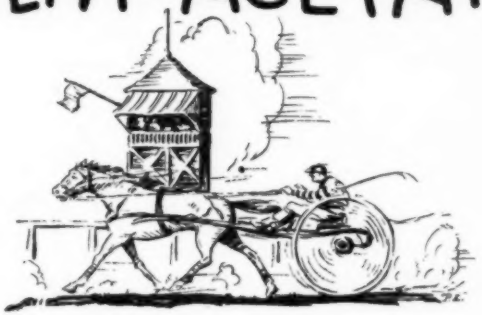
Precipitation of Moisture

There is bound to be a constant precipitation of moisture all through the pipe line and the thing to do is to recognize it and cope with it, rather than ignore and neglect it. Wherever air flows through a pipe, a drop in pressure is contemplated, and this means an increased tendency to drop water. There is a constant tendency of pipe fitters to use small sizes of pipe wherever possible, but this is a practice in connection with compressed air that should be strictly avoided; in a general way the bigger the pipe line the better.

A small pipe causes such a drop in pressure and consequent lowering of temperature that the precipitation will be heavy, whereas the large pipe line causes very little loss of pressure, and hence temperature, and the slower-moving current of expanding air has more chance to recover its heat through conduction through the pipe from the surrounding atmosphere. As a result there is less precipitation, and less refrigeration at the gun nozzle, hence less chilling effect on the finishing material. Specifically, one-inch pipe lines to spray booths are none too large.

The importance of trapping the moisture at the highest point, as mentioned before, cannot be overestimated. If this condensation be allowed to follow through the pipe lines it will be re-absorbed by the air at lower pressure and higher temperature than that at which it was precipitated—a condition always present.

PENT-ACETATE



IT'S the finish that counts, whatever other qualities a lacquer may have. Will it dry evenly? Will it have good gloss? Freedom from "blush"?

These questions are satisfactorily answered for those lacquer manufacturers who are now using PENT-ACETATE (pure amyl acetate)—the *stable* lacquer solvent.

And by *stable* we mean that PENT-ACETATE is not subject to chemical decomposition in lacquer formulae. It is always uniform—the pure acetate of PENTASOL (pure amyl alcohol). The chemical stability will be the same a year hence as it is today. And its price is pledged by the Sharples Solvents Corp. to be as non-fluctuating and as stable as its chemical formula.

May we suggest that you try out a test formulation using PENT-ACETATE—either on a laboratory scale or on a commercial basis. Samples will be furnished—without cost or obligation.

The SHARPLES SOLVENTS *Corp.*

2304 WESTMORELAND STREET, PHILADELPHIA
548 B RAILWAY EXCHANGE BUILDING, CHICAGO
501 A FIFTH AVENUE, NEW YORK

From the above it will be seen that at every expansion of the air, there is a tendency to precipitate water, especially if this expansion be very marked and of such a degree as to prevent sufficiently rapid absorption of heat from the surrounding atmosphere, due to a high velocity. Such a condition is present at the pressure-reducing valves usually employed on the gun side of the water and oil separator—which position is decidedly in error. This pressure-reducing valve should be placed before the separator so that the released moisture may be "captured" before doing damage.

At the Spray Booth

While at the spray booth end of the pipe line, it might be well to mention that heating of the air, just prior to admission to the gun, will do much toward preventing the condensation of moisture from the atmosphere of the work room, in the presence of the refrigerating effect of the expanding air current from the gun nozzle. In point of fact, such heating is a true economy of compressed air. A steam jacket, surrounding a short length of pipe, will increase the volume approximately 20 per cent, and even if electricity at light rates were to be used for the purpose (neglecting the expense of renewing heating elements) it would be an economy.

At the Compressor

Going back again to the compressor end, if dry air is a sufficient warrant, place the radiating coil into which the compressor discharges, in a tank of water.

The place of intake of the air for the compressor must not be neglected. As a general rule, it is colder out of doors than indoors, hence the air at its worst outside (100 per cent humidity) would be better than any simultaneously prevailing condition inside. Take the air from the outside, but well up from the ground from where the morning dew evaporates.

It is worth while, while at it, to place a drip pocket in the intake pipe just before it enters the compressor, as this "suction" is an expansion of air even though slight, and in some parts of the country where the humidity is often very high a good deal of moisture may be trapped at this point. Care should be taken, though, to avoid complicating the contour of the inlet pipe to the detriment of the efficiency of the compressor.

In conclusion it should be mentioned that the same rules for grading compressed air piping should be followed as are followed for steam piping.

In buying cheap materials you never get more than you pay for.

The cash profits of any business may be increased in either one of two ways. The first method is by an increase of sales. The second way to increase profits is by the elimination of internal waste.

The DeVilbiss Co.'s Indianapolis Branch Enlarged

The Indianapolis Sales and Service Branch, located at 361 North Illinois St., of The DeVilbiss Co., the well-known Toledo manufacturer of the DeVilbiss Spray Finishing and Painting Equipment, has recently increased its space and improved its facilities. A complete repair service is now offered to its large list of Indiana customers. Stock is also carried at this Branch, making possible prompt deliveries.

Mr. John W. Humphrey has joined the Indianapolis DeVilbiss Spray Equipment selling force.

First—Kentalac

Second—Red S. Building Coater

Third—Red S. Flat Finish

This method gives a full bodied rubbed effect without any labor of rubbing.

Write us and our demonstrator will call and show you.

The Schaefer Company

1315 West Kentucky Street
LOUISVILLE, KENTUCKY

Manufacturers of
VARNISHES *and* LACQUERS

Colors at Paris Auto Show

Director of Duco Color Advisory Service reviews the colors and color schemes seen on latest cars exhibited at the Paris Automobile Show

By H. Ledyard Towle

ONE OF THE outstanding features of the Paris Automobile Salon this year is the use of color. Where formerly the Continental manufacturer thought nothing of changing his radiator and hood lines or making a new type body, he now has taken a leaf from the large production manufacturers of the United States, and is depending more upon a unified output as a means of keeping automobile prices within the reach of a larger public. For this purpose he is depending upon color to lend variety and interest to his offerings. He is using it with a firmer knowledge and a daring lack of restraint.

Bright roofs on closed models, gray creams and cafe au lait on the bodies and fenders, wheels in color, and upholstery in new and interesting weaves and patterns are in evidence. Striping is apparently becoming a thing of the past and the color harmony is accented by a brighter molding which does not need a stripe to give it life.

In passing through the broad aisles of the Grand Palais, filled with a good natured throng made up of many nationalities, there were many cars which made an instant appeal to attention. There was a convertible sport sedan, long and low, its top deck and rear quarter in Borgia wine, a brilliant hue like crimson. The body, below a narrow belt moulding, was in white with a pale coral tinge, the fenders in gray and the disk wheels of the same color as the body. The upholstery was taupe, lying along the backs of the seats in wide crushed gathers which made a soft and inviting cushion.

Close by was a sedan in brown and cigarette color, with a hint of vermillion on the mouldings and with brown fenders and wheels of a lighter color. The top deck or roof was treated in a most interesting manner in that it had a large square over the central portion, covered with a soft beige leather substitute, while the balance of the roof, edge and the entire upper part of the car were brown.

There is a number of cars with corrugated-metal running boards and I notice, with great interest, the use of color which is laid in the hollows. One car particularly, which was finished in a pale cream, had burnt orange in the corrugations of its running board. The interiors of the closed cars are more sumptuous than ever and I note the use of a great many veneers of rare woods.

A Few Color Schemes

It would be difficult to review every color harmony at the Salon. Some of the outstanding color schemes included a Citroen coupe in cafe au lait and light blue, with fenders of sable and wheels in the lighter color; a beautiful Torn in green with disk wheels of polished aluminum; a low sedan pour le sport in aleutian brown, with green moldings and fenders; a Lancia sport sedan in brocatelle

Ed Smith's Page

HAVE YOU EVER HEARD OF A 5-POINT LACQUER ENAMEL?

SMITH Esco-lac is a "5-POINT" LACQUER Enamel.

The first point is that due to proper "balance" of high boiling solvents and nitro-celulose it has low evaporation in application. The result is *that more lacquer gets onto the job where it belongs.*

The second point is that due to the same balance it has *greater building qualities.*

The third point is that it *covers a larger area per gallon.*

The fourth point is that it produces a finer surface in less time, with less effort and with less material.

The fifth point is the result of the combination of the first four points — IT COSTS LESS PER SQUARE FOOT OF FINISHED SURFACE.

There, in a nutshell, are the five reasons why Edward Smith Lacquer Enamel is winning the attention of finishing foremen everywhere.

A great many men have written for my complimentary sample panel which shows exactly how this "5-point" lacquer enamel compares with similar finishes. I will be glad to send one to you if you will simply write your name and address on the margin of this page and mail back to me.

Ed Smith

EDWARD SMITH & COMPANY

Makers of Paints and Varnishes for 100 Years

127 West Avenue

Long Island City, N. Y.

green with black fenders and wheels of scarlet; a coupe in brilliantine with mouldings, fenders and wheels in sable; a four passenger coupe of Congo smoke color with fenders of brown and black wire wheels; a limousine with crimson top and fenders, gray body, sable wheels and taupe upholstery.

Also, there were: A very smart little sedan, all in brown, with cream mouldings, and wheels, the seats upholstered in brown leather and the side walls and ceiling in a rich silken brocade, woven in an intricate flowered pattern; a distinguished Isotta Fraschini in cream, with door panels and instrument board in delicate mother of pearl pyralin; and sport cars in all the colors of the rainbow, especially shades of light blue, green and red.

One of the strongest impressions given by the Salon, in regard to finish, is that color is being emphasized more than ever and that the Continental manufacturers are taking full advantage of its possibilities.

The Firm's Prosperity

Every human being employed in industry has a personal desire to earn as much as possible. This is no disgrace, for in the final summary, that is what we are all working for, and we owe it to ourselves and our families to earn as much as we possibly can.

It naturally follows that a firm that is making money is more willing and better able to pay its employees a maximum income. The reverse is also true. Where a firm is selling at a close figure and barely getting by, a request for higher wages is almost sure to meet with refusal.

It is a fact that where every worker uses care in handling the materials intrusted to him, where waste is absent and leaks, both large and small, are practically non-existent, then that firm makes more money and it is far easier for good workmen to earn maximum wages with such a concern. —C. Dan Youngs.

The proper setting of maximum and minimum limits is an important factor in securing a better turnover of inventory.

New Bulletin on Spray Equipment

The Alexander Milburn Co., Baltimore, Md., is sending out a 4-page bulletin which illustrates and describes a new type of spray gun and other equipment for use in modern paint and lacquer spraying.

The Valle' Co. Moves Into Larger Quarters

The Valle' Industrial Paint Co., of Cleveland, has changed its name to The Valle' Co., and has moved to its new plant at 4476 E. 71st St., Cleveland, Ohio.

The Valle' Co. has purchased the land, plant and equipment formerly owned and occupied by The Van Camp Varnish Co.

Dr. Cecilio D. Valle', president, has been connected with the paint and varnish industry for the past 20 years, and is known as an authority on lacquers and technical finishes.

Mr. W. F. Dentzer, formerly with The Truscon Laboratories, is Vice-President and is located in New York State.

Mr. M. C. King is taking care of the automotive industry in the Detroit territory.

Mr. J. C. Birdsall, formerly with the Van Camp Varnish Co., has joined the Valle' Co. as District salesman.

The plant and equipment acquired is one of the most complete and modern in Cleveland, and with this acquisition, The Valle' Co. will add to its various lines, a complete line of industrial varnishes. A new, large, modern fireproof building, added to the present building, will be devoted to the exclusive manufacture of lacquers.

"The Very Best Wood Primer We Have Ever Used!"

—says a large user of

Flint Lacquer Primer

FLINT LACQUER PRIMER gives the best foundation for Lacquer. It can be sprayed, dipped or tumbled—*Dries in one hour to sand.* Sands better than shellac and produces a smooth surface of great tensile strength. Made of nitro-cellulose, therefore contains the proper ingredients for knitting with finishing coats.

Made clear for walnut and mahogany finishes and also in full line of colors for use under colored Lacquer enamels.

Flint Lacquer Enamels

(*In All Colors*)

A velvet enamel, spraying freely, easy flowing, resulting in a smooth film.

Dries with a durable finish of exceptional body.

Can be obtained in any desired color.

Order samples and convince yourself under your own working condition.

MAYER & LOEWENSTEIN~
LONG ISLAND CITY, NEW YORK

Kindly mention INDUSTRIAL FINISHING when writing advertisers

Foreman finisher calls attention to the beauty and elegance of the smooth, dull-luster, rubbed finish for interior woodwork, cabinet work, etc., and recommends equipment, supplies and methods for doing this work

Rubbing and Polishing Finished Woodwork

By John A. Twamley

THE DULL LUSTER of a rubbed finish is more artistic than a high-gloss surface; there is no doubt as to this. Such a finish is popular for paint, enamel, varnish and shellac-finished surfaces. With a painted surface, the dull finish is gained by mixing the paint for that purpose. In the case of enamel, the dull finish is usually gained by the use of enamel made to dry without gloss — a matt finish — but gloss enamel is used at times, and the gloss is removed by rubbing.

In some instances, varnished surfaces are produced by using what we call flat varnishes—varnishes which dry without gloss, but often the varnishes which dry hard and with a high gloss are used and, when dry, the gloss is removed by rubbing. Surfaces, to which have been applied two or more coats of shellac, are often rubbed to a dull finish, this being about the quickest and cheapest way to produce such a finish.

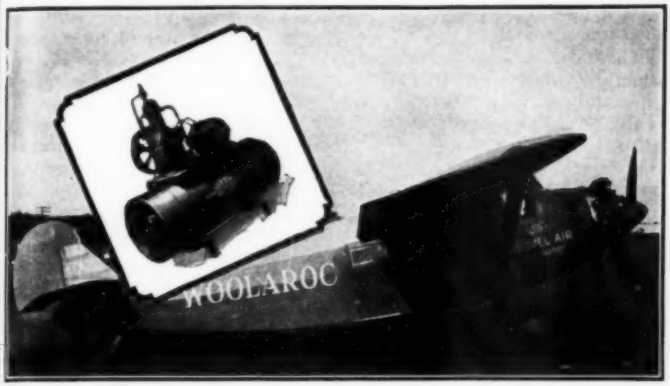
Hand Rubbing Equipment

All of these gloss finishes are sometimes given the dull-luster effect by coating them with wax, and polishing with a brush or cloth. Now let us go into detail as to rubbing. This is done in various ways, depending entirely upon the amount of time and money the job will afford. The slow-rubbing process or method calls for the use of fine pumice stone, water or any non-drying, thin rubbing oil. (Sewing machine oil and thin motor oil are good.)

Do the rubbing with a felt pad about one inch thick, two inches wide and four or five inches long. Turn the ends over a block of wood and tack them down. Soak this rubbing felt in water and soak the surface to be rubbed with water also. Never rub it dry with the pumice-stone, or you will scratch it. Dip the wet felt pad in the dry fine pumice-stone powder and transfer it to the surface to be rubbed.

Recommended Rubbing Practice

Rubbing requires great care and much patience. Rub with the length of the grain, with an even, steady stroke; and be sure to let the rubbing strokes run the full length of the board being rubbed if possible. Aim to do about the same amount of rubbing on every inch of surface, that is, rub about the same length of time on every



Protective Coating applied with Curtis Air!

Here is a job of "industrial finishing" that differs from yours only in that it is perhaps even more particular. This is the plane that flew to Hawaii. Lives were entrusted to it on one of the most adventurous flights the world has ever known. No detail, not even the finish was unimportant.

A Curtis Compressor supplied the air for this paint spray machine, for the same reason that a Curtis should supply the air for your outfit—namely, the patented "controlled splash" lubrication which prevents clogging of oil filters, thus insuring a perfect coating; and the precision manufacture that builds reliability into a Curtis as into a fine automobile.

73 years manufacturing experience—with 30 devoted to pneumatic engineering—tell the Curtis story of leadership. May we send catalog?

Curtis—St. Louis

Pneumatic Machinery Co. 74th Year U.S.A.

1977 Kienlen Ave., St. Louis. 3518-D Hudson Terminal, New York.

CHECK ITEMS IN WHICH INTERESTED

Paint Spray Compressor. Hand unloader. (By-pass for starting.)

Model "A" Air Compressors. Full self-oiling. Water-cooled.

Air Hoists, Cranes, Trolleys. Fast, economical, speed up production. P2

square inch of surface, and use the same pressure on the felt.

About six or eight strokes will usually remove the gloss, the dirt nibs, and smooth up the coat generally. Examine the surface often after washing or wiping it dry. As soon as it appears dull and smooth, stop rubbing it.

Never begin to rub a finished surface until the varnish, shellac, enamel or paint is absolutely dry and hard, beyond a doubt. In some instances, such as piano finishing, the varnish is permitted to dry for a period of one month before any rubbing is done.

When rubbing doors, panels or any wood trim where the extreme ends are within easy reach, rub directly from one end to the other with a clean sweep of the felt. Keep the surface well moistened by occasionally dipping the felt in the oil or water being used, as the work demands it. When the surface has been evenly rubbed and no gloss streaks appear, when observed with the light reflection on it, wipe off as much of the pumice as possible.

Fine Rubbing; Polishing

After a surface has been rubbed to a smooth and uniformly-dull luster, it is polished by what is called a fine rubbing. In this work a felt rubbing pad is first used, but rottenstone instead of pumice is the cutting material. Oil is used instead of water.

After a thorough rubbing with the felt pad, a final rub is given on high-class cabinet work, using the palm of the bare hand and rottenstone in oil. The cleaning is done with a soft cloth slightly dampened with benzine. Then give it a dry rub with a soft chamois skin to polish, and the job is complete.

The Cost of Cheapness

An auto painter recently moved from Los Angeles to Nevada and opened a shop where he lacquered cars for $15.00 each, regardless of size. When he had moved on after thirty days, car owners found they had paid for one coat of lacquer sprayed on the bare metal. Moral: Nothing is cheap without a reason.—C. D. Y.

Out Hollywood Way

The latest fad out Hollywood way, with movie actresses, is the style of nude stockings in painted floral designs. Various designs are painted on the bare skin with an air-brush. Clear waterproof lacquer is being used for a protective coating.—J. C.

Editor's Note: Finishers, let's go to Hollywood!

Bulletin on New Fire Protective Device

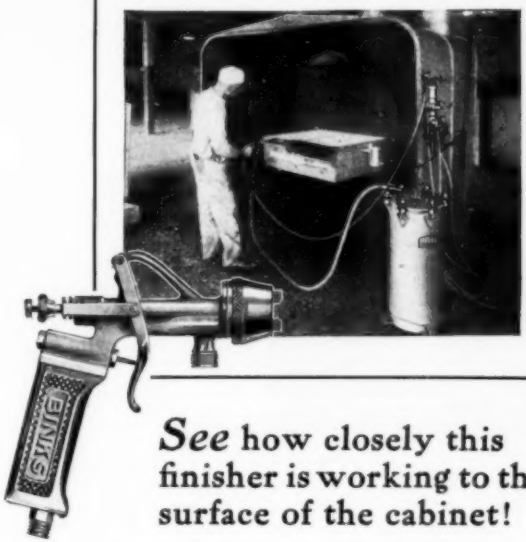
Pyrene Mfg. Co., Newark, N. J., have just issued a 4-page bulletin which illustrates and describes "The Phomene Accumulator," which is said to be "an engineering development of revolutionary importance in the field of fire protection for flammable liquids." It is particularly adapted to installation in all finishing departments.

New Product Announced by Midwest Varnish Co.

"No-E-Quill Lac Enamel," is the name of a recent development announced by the Midwest Varnish Co. of Chicago.

The colors in the No-E-Quill Lac line are said to be of the soft oriental tones, and remarkable combinations may be obtained by their use.

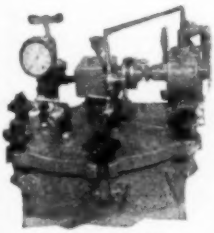
According to the manufacturer, four hours are required for No-E-Quill Lac to dry hard enough to sand, rub or recoat. The initial set, while rapid, allows ample time to work, resulting in a smooth, soft, simplex eggshell gloss.



See how closely this finisher is working to the surface of the cabinet!

The spray that makes this possible assures evenness in the finish, a finish that endangers no comebacks and requires none of the usual costly retouching. Hand-rubbing is reduced to a minimum. He is working closely to the surface with a Binks Spray Gun.

This gun atomizes at the immediate outlet of the nozzle; the discharge is a fine, easily controlled mist. Were it not for this feature, atomization would take place at the end of the spray, making a longer, hard-to-control spray necessary. In the short spray, permissable with the Binks Spray Gun, there is *no evaporation* of low boiling solvents. Every ingredient serves the purpose for which it was intended. Every solvent is in the applied finish—not in the air.



Binks Pressure-Head with Air-Motor Agitator

Now you can have a really dependable agitator on your pressure tanks for Wood Lacquers, Wood Fillers, Enamels, etc. The Binks Air Motor supplies a new element of safety and efficiency. Finishing materials are constantly kept in a uniform consistency and the mixture of all ingredients reaches the spray gun in even, perfect flow. Write for details.

The Binks Spray Gun is a good gun. You should consider it for your use. Full details upon request.

BINKS SPRAY EQUIPMENT CO.

Dept. L, 3114 Carroll Ave. - CHICAGO, ILL.

Sandpapering in the Finishing Room

Practical foreman finisher calls attention to the need of instructing workmen in the use of sandpaper, and gives detailed recommendations for every sanding operation in modern wood finishing

By Wm. C. Kyle

SANDPAPERING, although simple in many respects, is one of the most important operations in the finishing room, since in this operation one can make or mar what is intended to be a beautiful finish. Like many other hand operations, it is one that every person cannot learn to perform successfully, as I have discovered after long experience in the finishing room.

My experience has been that young boys learn this work more readily than the more seasoned men; perhaps the same is true of all other lines of work.

It is not always the fault of the workman that his sanding is unsatisfactory. Frequently the new boy or man is given some sandpaper and set to work with others in the crew, without having first received any specific instructions how to proceed — or without having been told why the work should be done according to a certain standard. He is left to discover these things for himself as best he may. If, from natural adaptability or any other reason, he makes the necessary discovery at the start, he may be a success. However, if he has to wait and learn in the hard school of experience, receiving frequent kicks about his poor workmanship without obtaining any definite information as to how to improve it, he is counted a failure before he has time to become a success.

Starting a New Man

The proper way to start a new workman at the task of sanding is to show him a surface that has been correctly sanded; also one that has not been so well done. If there is available a varnished surface on which the surface coat had not been properly sanded, the beginner should be shown this; here he can see why sanding is such an important operation. It should be explained to him how difficult it is to rub to a smooth

"If you could ask manufacturers who use Murphy varnishes and finishes on furniture, pianos, automobiles and other things, if you could talk to architects who specify Murphy finishes, and master painters who use them, you would find that all have a certain confidence in the name Murphy. This confidence is what constitutes the Murphy reputation. Murphy Varnish people are determined, come what will, they will never put out a product that lessens their claim to that reputation."

A New Murphy Product

Murphy's Clear Tone Velvet Lacquer

Every product that Murphy brings out is designed to do a job which will add to their reputation. Furniture manufacturers will be more than interested in what Murphy Clear Tone Velvet Lacquer has to offer.

1. Dries naturally to a *rubbed effect*—beautiful soft glow.
2. Positively *does not cloud the work.* Absolutely transparent. (Clear-tone Velvet Finish).
3. Does *not* settle in the can.
4. Easiest Sanding Lacquer (here's where you save without the sacrifice of refinement or durability). Does not clog the sandpaper.
5. Has excellent *building* quality; can be used as a first coat, intermediate coat or finishing coat in connection with regular lacquers.
6. Saves *one-half* present rubbing cost.
7. No *pin-holing* on largest surfaces like grand piano tops.
8. Will intermix with any Murphy Clear Lacquer if additional lustre is desired.

A postal card will bring a representative to call and demonstrate this new Murphy product.

MURPHY VARNISH COMPANY
NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

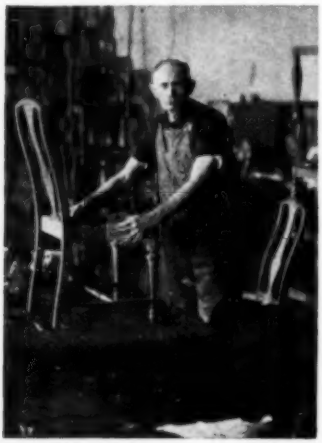
finish, surfaces which have not been properly sanded.

Uniformly good finish is dependent on a uniform standard of work in the sanding department, and this, in turn, is dependent on close and uniform inspection. Even experienced workmen are sometimes apt to become careless if there is any laxity of inspection.

Uniform Sanding

Uniform sanding depends to a great extent on the use of uniform sandpaper. Many sanding operations occur in the finishing room, and for each operation there is a grade of sandpaper best suited for that purpose. The purchasing department should see to it that a supply of the proper grades of paper is always on hand; those in charge of sanding should insist that only the grades best suited for the purpose are used.

Every varnish rubber has had some experience rubbing varnish or lacquer applied over shellac, or some other surfacer, which was not properly sanded in the corners. Under these conditions the rubber is faced with the alternative of rubbing the varnish through to make it smooth, or leaving it rough. In either case the result is a poor appearance. This "doctoring up" of a poor job takes up a good deal of the rubber's time unnecessarily, for he is bound to try to make it as smooth as possible without rubbing through; if he does rub through, the surface then has to be touched up with shellac and varnish, and rerubbed again.



Sanding, in the chair-factory finishing room.

Different finishing rooms have a different number of sanding operations. In some finishing rooms, where water stain is used, articles come in sanded ready for the stain. The surfaces are sponged with water in the cabinet room before receiving the final "polish" sanding. Water sponging raises the surface grain of the wood and, after this is sanded smooth, very little fuzz remains to be raised by the water stain. This is especially true of mahogany. If this surface fuzz is not kept down to a minimum before the stain is applied it cannot (with some grades of mahogany) be removed without cutting away too much stained wood and causing the finish to present a faded appearance.

Sponging; Sanding

If water sponging is not done in the cabinet department (where it should be done) it must be done in the finishing room. Warm water and a coarse sponge are best — warm water because it raises the grain more rapidly, and it dries out more quickly. Apply just enough water to moisten the surface, and barely enough pres-

WORTHINGTON

'Paint air, with

Worthington Feather Valve Compressors

Worthington Feather (Reg. U. S. Pat. Off.) Valve Compressors may be had in six sizes—2½ x 3, 3⅛ x 3, 3½ x 4, 4¼ x 4, 4½ x 5, 6½ x 6.

The 2½ x 3, 3⅛ x 3 and 4¼ x 4 sizes are built air cooled only. The 3½ x 4 is built both air and water cooled. The two larger sizes are built water cooled only.

All may be fitted for operation in a great variety of ways such as belted with short belt and idler, with tight and loose pulleys and with several styles of unloaders.

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sure on the sponge to spread the water.

When the surface is thoroughly dry after sponging, sand it with No. O garnet, or other similar paper. The cutting points of the paper must be sharp, and it is important that the sander use only enough pressure to cut away the raised fibers. To cut below these fibers, simply loosens others to take their place, and the last state will be no better than the first.

Large flat surfaces are better sanded with the paper folded around a hand block of felt, or a wooden block with a piece of thin felt glued to the bottom. A typical block is about 5-in. long and 3½-in. wide at the bottom, tapering to 3-in. at the top. This permits closer contact with the edges when one is sanding framed panels. In the case of panels within frames, it is well to follow the block with a piece of folded sandpaper, so as to get up quite closely. Small blocks, tapered back sharply at the ends, are fine for getting into corners. These blocks may range in widths from ½-in. up, according to the nature of the work being done.

In the case of fuzzy mahogany, the next sanding operation is to go over the wash coat of shellac, after the stain has been applied. This wash coat is put on to make the remaining surface fuzz stand up stiff like fine hair points. If this is not done, the filler will gather about the fuzz and cloud the finish. Years ago it was customary, in some shops, to fill the wood without the wash coat, then sand it after the filler was dry. This is not a good practice and it has been generally discontinued. The correct wash coat of shellac is 1½-lbs. of gum to a gallon of solvent.

Sanding Wash Coats

Instructions just given for sanding after sponging are applicable to sanding the wash coat of shellac, an additional caution being to avoid cutting through the stain on the edges. Here is where the tapered block is of special advantage when sanding panels. For this work No. 2/0 garnet, or paper with similar cutting points, is best. The paper must be sharp, and used with light pressure to avoid cutting into the stain and producing a faded appearance.

It is very important that all corners be carefully sanded. Flat edges may be sanded with the paper held in the hand, using the tips of the fingers to apply the pressure and keeping the paper off the sharp corners—or they may be sanded with the paper wrapped around a small block. The former is the quicker way, but it requires practice to avoid cutting through the sharp edges.

As for the outside sharp corners there is really no need of leaving these as sharp. In the final sanding, while the wood is in the white, the sandpaper can be drawn once across these edges to remove the objectionable sharpness without detracting from the appearance of the article. This will remove the cause of a great deal of trouble in finishing rooms. Sharp outside corners cause trouble all along the line in the finishing room. Varnish will not stick to them as it should and, from the first sanding to the final rubbing, there is always danger of cutting through to the white.

After sanding the wash coat of shellac, the next sanding operation is that of smoothing up the shellac or surfacer, which is ap-

AD-EL-ITE
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Finishing Service

is ready when you are.

Our demonstrators set the color, lay out shading and decoration, and carry through the finish complete.

Our schedule of demonstrations on suites for the fall and winter Shows is being made now.

Write us for particulars.

Adams & Elting Co.

1833 Seward Street
Chicago, Ill.

"35 years of wood and metal finishing experience"

plied over the filler. Pure shellac is easy to sand to a smooth finish, provided it is applied uniformly and without brush marks. The grade of paper to use depends a good deal on the kind of coat applied. If it is a heavy coat, No. 0 paper is best; if it is a thin coat, the paper should not be coarser than No. 2/0 for flat surfaces, while for turnings and carvings with many sharp angles, No. 3/0 is best.

Sandpaper Too Dry

Sandpaper for use in the finishing room should have a soft, pliable back. Considerable trouble is caused by storing the sandpaper in a room of low humidity, in consequence of which the paper becomes brittle. In this condition it cracks easily when bent sharply to conform to certain sharp angles—one reason why so many edges are cut through to the white.

If there is no other available means of keeping sandpaper from becoming too dry it should be kept in a cupboard with a container of water in which is a sponge. But one must be careful and not overdo this part of it; if the paper takes up too much moisture the cutting points may loosen from the adhesive. If the paper is dry and brittle, and must be used immediately, the sheets may be spread out and the backs moistened with a damp sponge.

The best method to adopt in sanding the final coats of finish (laquer or varnish) depends on conditions. If these coats have been applied with a spray gun they will be fairly free from dirt, except such as may settle before they have dried dust-proof. It is not good practice to cut this heavy dirt down very much with sandpaper, especially with coarse paper, for it scratches and roughens the surface. A better way is to cut these nibs down with a steel scraper such as cabinet makers use for hand scraping. Of course, this must be done carefully to avoid cutting into the varnish and spoiling the surface. After the large nibs have been cut down, go over the surface with No. 3/0 paper to remove any dust adhering to the varnish.

The necessity for a great deal of sanding can be avoided by properly cleaning up the work before the coats are applied. In addition to the usual brush-dusting, all corners and crevices which cannot easily be reached with the duster should be blown out with a hand bellows or with compressed air. Compressed air is better, because it is more powerful, and more quickly and easily used.

SUPERIOR WOOD STAIN POWDERS

For Lacquer and all finishes.

Complete variety of shades. Samples and information on request.

W. D. LOCKWOOD & CO.
314 W. 14th St., New York

Ronnevig Joins Woodfinishing Products Co.

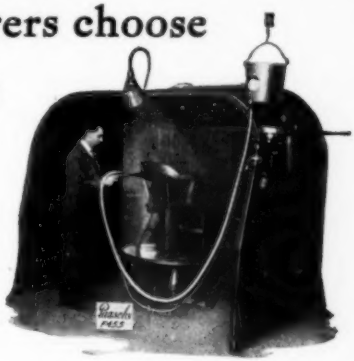
The Woodfinishing Products Co., of 434 Barretto St., New York City, announces with pleasure the association of H. Ronnevig with the company.

Mr. Ronnevig assumes full charge of the wood-finishing specialties department and laboratory. He is well known to the consuming trade, having been in the business for the last 30 years. During this time he has made a host of friends of those who have profited by his wide knowledge and the assistance he has rendered in finishing problems.

Extensive alterations have been made and additional modern machinery added to the stain, wood filler and lacquer departments of this company.

Big manufacturers choose Paasche Equipment Because—

THE FINISH IS IMPROVED



PAASCHE air finishing equipment will improve the finish on all classes of work. On the highest priced lines, this means a standard of perfection unapproached by other finishing methods. On moderate priced articles, it means adequate quality at a rate of production necessary to insure a profit. That is why it is the choice of big manufacturers like Karpen and Hartmann Trunk.

The Paasche patented water, oil, rust and scale separator collects and disposes of all foreign matter in the air line. Cleans itself automatically.

The air regulator controls air pressure anywhere from 150 lbs. to 1 lb., and is quickly adjusted to any pressure needed.

Paasche equipment is able to do better work at lower cost because each unit plays a definite part in a system developed through twenty years of experience. The air conditioner, for example, helps achieve perfection of finish by supplying the airbrush with a constant stream of clean, oil-free air. Defects and expensive retouching or going over are eliminated.

Every other Paasche unit, airbrush, rubbing machine, ventilating cabinet, etc., performs one or more definite tasks. May we send detailed information?

Paasche Airbrush Co.

1921 Diversey Parkway, Chicago, Ill.

Factory Branches:

New York, N. Y. Cleveland, Ohio Seattle, Wash. Davenport, Iowa
San Francisco, Cal. Los Angeles, Cal. Cincinnati, Ohio
Pittsburgh, Pa. Denver, Colo. Detroit, Mich. Philadelphia, Pa.
A. R. Williams Machinery Co., Toronto, Canada

IF 11-Gray

New finishes modernize an old product

Modern Clock Case Finishing

How mantle and wall clock cases in genuine mahogany are spray-stained and finished in lacquer in a large Connecticut clock factory

By H. A. Donaldson

TIME PIECES of all kinds are produced in the little state of Connecticut—and have been since the days of the original grandfather's clocks that stood in the hall. A concern that dates its existence back something like 100 years is the New Haven Clock Co., makers of both watches and clocks, the latter covering the range of popular styles as we know them today.

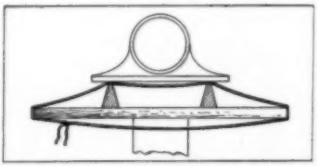
Because this company's history runs back to the days of wooden wheels, it does not follow that it lives in the past alone. Its practice, on the contrary, is right up-to-date. Every advance common to industry is studied for possible application to clock making and is, at least, given a trial if it seems feasible for their work. This is as true of finishing processes as it is of woodworking and metal fabrication.

Five spray booths in the plant, and as many men, have taken the place of the long rows of men and women who formerly applied finishes to clock cases. No brush work at all is done now, except on ornamental designs.

Mahogany Favored

The tambour shape for mantels and the banjo shape for wall clocks form a large portion of the output. These models have cases of solid mahogany or mahogany veneer. African mahogany is used extensively. This wood is not dark, as is the general impression, but is of a pinkish taupe color. The commercial "mahogany" color that the public demands is always produced by some sort of a stain.

At the New Haven plant, each clock case is sprayed with a mahogany stain. This stain is sprayed all over the exterior, the bottom included, and over as much of the interior as is accessible with the spray gun. When thoroughly dry, the case is sanded to remove the raised grain.



Turntable arrangement for clock-case spray finishing.

In all the spraying operations on a tambour model, the bottom is sprayed first. The workman holds the case in his hand for this part of the work. Then the case is put on a turntable and sprayed over the entire surface that is visible when the clock is in use. The whole operation is performed in a few seconds, but it is perfectly done even at this speed.

At the right side of the booth,

NIKOLAS LACQUERS

SINCE 1890 we have made only superior quality lacquers, because inferior quality is alway disappointing, no matter how cheap it may be.

No great success was ever made with an inferior product. That is one reason we don't make it.

G. J. Nikolas & Co., Inc.

1227-35 Van Buren Street
CHICAGO, ILL.

Branches:

33-35 Grand St., Brooklyn
1150 Venice Blvd., Los Angeles
73 Main St., San Francisco

two separate hose lead up to nozzles, one of the latter being the gun for applying the finish and the other being a compressed air nozzle. Each case is blown off with air before either the stain or the lacquer is applied, in order to remove such particles of dust as may have settled, even though not discernable by the eye.

Lacquer Finish Used

A nationally-known nitro-cellulose lacquer is applied after the sanding of the grain is completed. Four coats of lacquer are sprayed on and the result is a finish that is deep and durable. After each coat, the trays of cases are put in a drying room where they stay until they take their turn in the routine of the shop cycle. The heat in this room is just enough to kill the dampness.

The rig employed for mounting the cases is shown by the accompanying drawing. On the turntable, two sticks are placed and held with a cord. These sticks are beveled to leave only ⅛-in. width at the top, and it is upon these narrow edges that the clock cases rest. The operator puts the case, with its freshly-sprayed bottom, directly on these sticks but the narrow edges of which scarcely leave a mark on the already drying coat. This is a rig that is extremely simple; the men like it and it answers all requirements.

Banjo clocks usually carry some sort of an ornament below the case proper, usually a block of solid mahogany that is somewhat triangular in shape. On some clocks, this is painted black, as a "set-off" to the brown of the mahogany. This black is a brush job, followed later by a coat of clear lacquer over the entire case.

Rubbed to Dull Gloss

The lacquer finish of clock cases does not meet the selling requirements. Its "shine" is objectionable, from the standard of high-class retail sales. So it is that a rubbing department of considerable size must be maintained, where more men than in the spraying department spend all their time in rubbing down the cases to a dull gloss. Pumice and oil are used for this work, the medium of application being a felt pad on a wood or rubber block.

Discoloration of Clear Lacquers

Some finishers are troubled a great deal by changes that clear lacquers go through when left standing in a tin can for any amount of time. The change that troubles mostly is the turning of water white and almost water white lacquers into a very dark amber; and sometimes a precipitation occurs. This is all due to a chemical change.

These lacquers, as we all know, are derived from nitrated cotton or a substitute of cotton. The nitric acid is then taken out by washing the cotton and then rinsing it. This sometimes is done over and over again; but as much as the cotton is washed and rinsed, there is a certain trace of nitric acid left in it, which cannot be taken out. This acid acts on the tin container and causes the chemical change. In order to overcome this, all such lacquers should be stored in glass or porcelain containers.—Joseph M. Verderosa.

Beautiful finishes— the winning sales argument!

Design may be reasonable, materials the best obtainable, and workmanship of highest character, but the finish really clinches the sale—a beautiful finish is the winning sales argument.

Many manufacturers have overcome sales resistance on furniture and kindred lines by adopting the ARMORLAC system of wood finishing.

ARMORLAC produces a permanently beautiful finish, on wood surfaces, which cannot be achieved with varnish. Yet, it costs no more to use ARMORLAC.

Get the details on the finish that lasts as long as the product —ARMORLAC.

John L. Armitage & Co.
Est. 1876
NEWARK, N. J.
Varnishes—Lacquers—Japans

Armitage ARMORLAC
The Final Furniture Finish

Be sure you are right, then go ahead!

Recommending a wise policy for manufacturers — that of being always alert to what is new, but to investigate its merits and make suitable tests before adopting it completely.

Make Tests Before Changing

By Albert Ackerman

IN MOST plants and with a majority of workmen, new ideas and new products do not get the fair trial they should. It is seldom indeed that a workman will labor whole heartedly to make a "go" of something that is radically different from what he has been used to, be it a material, a tool or a process. This is especially so when the daily output is expected to be higher after the change. Any number of little excuses are brought out and ways are found to defeat the desired ends.

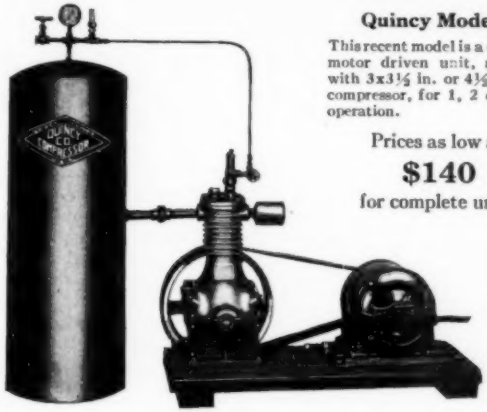
Thus it is that methods and practices soon fall back to where they were before. In a railroad shop, for example, the management tried for some time to get first class work on passenger-car interiors by spraying. One after another of the brush hands failed to get rid of the sags or drips at edges.

Finally, when it seemed certain that weeks of unsuccessful trials had killed the use of the spray system in the shop, the superintendent came out with the statement that he was going to fire the next man who didn't exhibit skill enough to spray a parlor car panel, and he was going to find a man who could do so if he had to fire his entire present gang and put on all new men. Thereafter, anybody in the paint shop was able to do the work satisfactorily.

But the opposite side of new things is occasionally encountered—the practice of immediately taking to them so completely that all the good in the old is overlooked. This is like burning your bridges behind you —when you are really not sure whether or not you may have to go back.

Following the Crowd

Along this line of thought, the trouble may come through getting overly enthusiastic over a new wood that has come into the market or some other new material—highly advertised, perhaps—or



Quincy Model H

This recent model is a complete motor driven unit, available with 3x3½ in. or 4½x3½ in. compressor, for 1, 2 or 3 gun operation.

Prices as low as

$140

for complete units

Always Steady Pressure and Clean Air

The heart of your paint spray outfit is the compressor. Make sure that yours is a Quincy. Then you'll know it's ample in size and power—a source of uniform pressure and dry, clean air that you can always depend upon.

In the complete Quincy Line are models for use with all standard spray gun outfits. Each is engineer-built by us, according to our original designs. Each will pay its way in your shop, earning profits by helping you turn out better jobs; lowering costs by insuring continuous service and long life. Full information gladly sent upon request.

Write today for our latest Paint Spray Bulletin

QUINCY COMPRESSOR CO.

305 Maine St. QUINCY COMPRESSOR **Quincy, Ill.**

K751

over some new kind of finish that "the boys" are all talking about. It is when all the salesmen are talking about a new discovery, and your friends in the city are bragging about the results they are getting, and your own trade writes in to learn why you are not falling in line—it is then that it is hard for an executive to keep his head.

The "herd mind" and mass psychology are tough things to combat. But before following the crowd, every manufacturer should be sure that he really wants to go—that it wouldn't be better for him to buck the stream.

Let us take the case of some new brand of lacquer, for instance. We will assume that a manufacturer of dressers and boudoir tables is sorely tempted to, "do as all the rest of them are doing," and discard the old varnish finishes for this new lacquer —a lacquer that is advertised in all the ladies' magazines, let us say.

It is decidedly unwise, to say the least, for any one to jump at the conclusion that his past efforts have been superseded, just because there is a lot of talk going the rounds. The contention here is that no one finish is best for all purposes and, before you adopt a new finish for your work, be mighty sure that it is a better one, even if it does happen to be cheaper.

Suppose the manufacturer of dressers has had a demonstration of the lacquer and the article looks good. He would like to clinch extra sales with his dealers right away on the strength of this added sales feature. But wait! How do you know this finish is going to retain its smoothness, that it will not peel, that it will not dull?

Deferred Defects

It is perfectly possible that these things will not show up for a month or even for a year. But by that time a change may begin to take place. Perhaps it is because the new finish will not stand heat and moisture conditions in connection with your woods. Your drying methods may repell such a finish, or, they may be such that the lacquer penetrates much deeper than is customary and the ultimate result in the hands of the user is not satisfactory.

The only way to do with this thing—with any innovation—is to give it the test of time. Force yourself to that conclusion. Make up a few dressers, put one or two in your own home for observation; send one north and one south, to dealers whom you know will put them through the same acid test.

At the end of a year get a report on the goods. The users will know then if the finish is going to peel, or if it is beginning to look old. If you find that the results are not satisfactory, you will be thankful for not having flooded the market with your stuff. (Long before that, you will have heard reports that your competitor's stuff wasn't standing up, no doubt.)

If you find the results are good, you have lost but little, for then you can advertise to the world the exhaustive tests you have made. And so you will learn, though hard it is, that whether it is wood or finishes or methods, it pays big dividends to look before you leap and not to cast aside that which is good.

The manufacturers of such magnificent railway cars as this —use only the finest varnish obtainable.

—and this same varnish is a wonderful finish for such splendid furniture as this.

If you make a line of furniture commensurate with that shown above, it deserves the best finish that you can give it....it is on a par with fine railway cars and justifies the same finish. We make varnish used by the leading railroads for coaches, diners, sleepers, parlor cars, etc., and this in itself should be your guarantee that it is positively of the best. If your furniture (or whatever you make) ranks among the best....then it deserves the best finish. Try our varnish—sample on request.

THE THRESHER VARNISH CO.

DAYTON, OHIO

VARNISH——ENAMEL——LACQUER

And Deferred Payments

There is one factor that makes the above assumed case—and all others where a broad adoption is not preceded by exhaustive trials—all the more serious; it is installment buying. Called by any of the various names with which the dealer dresses up the practice, it simmers down to the practice of "owning it by the time it is worn out." It puts the manufacturer up against many complaints he would never receive if goods were sold on nothing longer than 30 days.

Thus, if a finish goes bad, it will show up before payments have much more than started. If a kiln drying practice is changed and doesn't work out under the user's conditions, the latter will find it out long before he has made all the payments; thus he has a lever with which to wring a very advantageous adjustment out of the retailer who, in turn, passes it on to the manufacturer.

An instance is known to this writer in which a change between Philippine and African mahogany veneer nearly swamped a manufacturer, due to the wood not staying glued long after reaching the retailer and ultimate buyer.

These things are unfair to the manufacturer, but he is a victim of changing modes of living. Under some cleverly worded schemes of selling household goods, "club members do not begin payments until one year of possession has passed by." Finishing departments, therefore, must "watch their steps" and not plunge blindly into untried practices.

General Motors Second Annual Fall Show

In every field of human endeavor, he that is first must perpetually live in the white light of publicity. Whether the leadership be vested in a man or a corporation, emulation and envy are ever at work.

In art, in literature, in music, in industry, the reward is always the same; likewise the penalty. The reward is widespread recognition; the penalty, fierce denial and detraction.

When an organization's work becomes a standard of conveyance for the whole world, it also becomes the target of the envious few. If this accomplishment were merely mediocre, the organization, like some others, would be left severely alone; but their achievement—a car for every purse and purpose—is a masterpiece, and it has verily set a million tongues a-wagging.

The great auditorium of the world's largest office building—the General Motors Building, whose gigantic outlines are brought into relief by thousands of colored lights (situated in the heart of Detroit, the automotive city) was revamped in a fall setting for the display of General Motors cars, iceless refrigerators, etc.

An entire freight car load of smilax was brought from Florida to provide a canopy for the setting. Two or more tons of arbor vitae were obtained from Northern Michigan to decorate the walls, while natural-looking paper lawns surrounded a number of ornamental fountains.

A score, more or less, of silhouette black panels on orange background, depicting the progress of transportation, were interspersed

with beautiful paintings of Autumnal scenes which lined the walls. Added attractions included concerts of unusual interest to the public.

In the exhibition hall were 97 passenger cars—products of five divisions of the company.

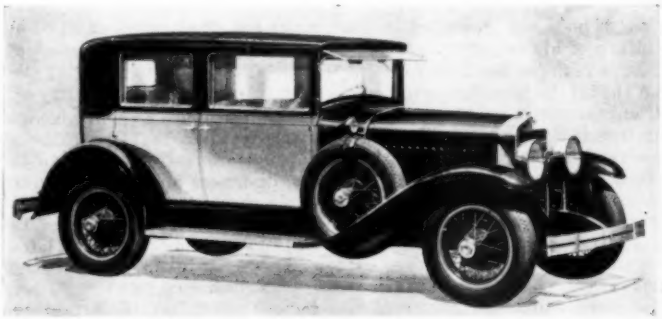
The Cadillac-LaSalle exhibition was the most attractive of any ever seen by the writer. Graceful body lines were accentuated by a combination and permutation of colors that nature alone could duplicate. A special feature of the show was a Cadillac custom-built body. The aluminum hood and cowl was engine-turned in concentric circles, very much like the back of a pocket watch. The aluminum surface was later finished in clear lacquer, producing a most beautiful finish. Incidentally it may be mentioned that Lincoln Motor Car Co. has for sometime past used this type of finish for instrument boards of all new Lincoln cars.

Next in beauty and appointment was the display of Buick passenger cars, in brand new colors. These cars include light and heavy motors, comprising "Series 115, 120 and 128," these figures denoting wheel base.

The Oakland exhibit, also in a captivating array of colors, comprised the new All-American Six Oakland and the new and finer Pontiac Six. Oakland exhibited its full 1928 line, in well-polished lacquers.

The most attractive Chevrolet exhibit was the "cabriolet" model, finished all over in black lacquer and striped in cream. Chevrolet exhibited seven passenger cars; also one-half and one-ton truck chassis. In another part of the building the Chevrolet exhibit consisted of several types of truck bodies—the latter being by Martin-Perry and Hercules.—K. N. Kathju.

In spite of the scoffers who see us all eventually standardized to the point where we look as similar as Ford cars, the subject of simplification still progresses, and thinking executives of the nation are co-operating to eliminate the unnecessary wastes caused by excess variety in size and pattern.



The new La Salle five-passenger town sedan appeared in a strikingly attractive color scheme.

Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 802, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

EDITORIAL

Economy in the Finishing Department

Today, industry in the United States has reached such a point of keen competition that the management of any well-regulated business would not think of being without a cost system.

The importance of this cannot be overestimated! In the finishing room particularly everyone from the superintendent or foreman down to the lowest-paid employee of the department, has an important duty to perform in keeping the operation costs down to the lowest level. Each worker has his part and his obligation to do this—even from selfish motives, if he is not interested in the welfare of his employer.

It is perhaps needless to point out that if the manufacturing cost of any article is excessive in proportion to selling price, the plant must eventually discontinue operations, since no business can run on indefinitely at a loss. It is therefore up to each employee who has any regard for his job to do his utmost to see that he does not add any unnecessary expense to the process of manufacture.

Probably the finishing department has more chances for losses and leaks than any other department, because of various conditions which permit so many things to continue unnoticed by management; for example, evaporation and spoiling of materials in the container, excessive waste of materials in spraying, improper use of reducers and oils, etc.

Where the factory has a cost department that functions properly, all materials going into the finishing department are charged against that department, but it is probable that only a few, if any, have such close supervision of costs as to be able to charge to any definite batch of manufacture, such things as the amount of cleaner used in cleaning hands, brushes, spray equipment and other things of this sort. This naturally may result in leaks.

Great Furniture Exhibition Planned

An event of outstanding interest to the entire furniture industry is being planned to properly celebrate the Grand Rapids 100th semi-annual furniture market and to commemorate 50 years of service. The Grand Rapids Market Association is completing plans for what promises to be an extraordinary and far-reaching display of furniture during the first three weeks of January.

This exhibition will include many features that should be of unusual interest and value to users, designers and manufacturers of finishes for furniture. It offers them the opportunity of becoming familiar with the latest and newest in furniture design in this country, and will help them to definitely ascertain the style trend for the coming season.

Remarkable Savings for Users of Cup Guns

Less
- Labor — Sanding and Rubbing
- Cost — Thinners and Time

The SPRACO

14-A Pressure Cup Gun

Represents these savings over a Suction Cup Gun because it will lay on a coat of lacquer or surfacer twice as heavy as will the Suction Gun, and at the same time save rubbing and sanding because of the smoother film.

The simplicity of the adjustment of this new type Gun appeals strongly to spray operators.

Further information given on request, better ask for Bulletin 103-P and save time

Spraco Painting Equipment Co.

60 High St., Boston, Mass.

Among the unique features being planned is an exhibition of what might be called "stylistic interiors," arranged by experts in this line of store display.

Another interesting feature will be a display of furniture reflecting styles popular from 10 to 50 years ago, which will automatically trace the evolution of American taste in furniture during that period. These pieces will be contrasted with the prevailing modes of the present day. Also, will there be a display of historic furniture from private homes, that should have an especial appeal for those interested in authentic antiques and period styles.

Of especial interest will be actual manufacture of furniture from the designer's sketch to the finished piece. It is planned to show in the process of building, from the designer's drawings, a case piece, a table, a chair and an upholstered frame.

In addition there will be an exhibit by furniture designers, and a display of the world's largest furniture reference library. Public meetings to be addressed by prominent speakers, several banquets, and special theatrical bookings are among the outlines for the entertainment of the visitors.

Change of Scene

In your October issue, Sir,
I note you've moved from where you were,
And this letter is to let you know
That I am glad to see you grow.

At six aught three you were before,
But now you're on another floor,
So I'm addressing this to you—
To Wulsin Building eight aught two.

And in this note I wish to say,
I hope that you are well and gay,
And that you and your magazine
Will both enjoy the change of scene.

If some time you can spare the space,
To print a picture of my face,
I hope, kind sir, this you will do—
So I'm enclosing it to you.

Of my frowning face I am not proud,
But perhaps it may pass in a crowd,
And so I hope it will be seen—
At some time in your magazine.

And here my voice I wish to raise,
"Industrial Finishing" to praise,
When I have finishing to do—
It helps me much to read it thru.

I'm going to write for you some time,
An article in metered rhyme,
Concerning how to finish wood,
And I do hope you'll think it good.

And when you read this friendly note,

I hope you will be glad I wrote,
And that I, very soon, will see
A little note from you to me.

And I hope your classy magazine,
Will for many, many years be seen;
It is a publication fine—
There's good advice in every line.

When my next article you give space,
With it I wish you'd print my face,
For I would like to have it seen
In "Industrial Finishing" magazine.

Have you before, at any time,
Received a letter all in rhyme?
Well, sir, I write them every day
Because for some, I'm getting pay.

Now I must stop and go to bed,
But not before my prayers I've said;
And here is something I will do:
I'll say a little prayer for you.

For your success, dear sir, I'll pray,
At the close of each and every day,
And also when the night is gone,
For your success I'll pray at dawn.

And after this is read by you,
Your answer here will soon be due,
So now dear Mister Rohr good bye.
Am enclosing stamp for your reply.

—John A. Twamley.

Water White Lacquers No. 82
For Gold
For Silver
For Brass
Always Dependable
Established 1857
CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

"Wears like Flint"

Half a Century of Success

Forty-six years ago the familiar trademark of The Cleveland Varnish Company was adopted as a mark of "quality and value."
It has grown in reputation throughout this near half century until today it is recognized and honored as *the symbol of a standard of quality* for the entire industry.

Test Cleveland lacquers, varnishes and other finishing materials in any way you will, subject them to any fair comparison you wish and you cannot fail to recognize their outstanding excellence and superiority.

Our rigidly enforced policy, determined upon in the beginning, has been responsible for much of our "half century of success"—viz: making a high quality, coupled with intelligent adaptability, and selling such goods honestly on a modest margin of profit.

We specialize in and have such surpassing qualities in our

Lacquers { Clear / Colored / Rubbed Effect

and in Rubbed effect varnishes
Flat, Velvet and Semi-bright

that no user can afford not to be acquainted with these goods.

Your Problems are Our Business

THE CLEVELAND VARNISH COMPANY

Established 1881

3111 EAST 87th STREET **CLEVELAND, OHIO, U. S. A.**

Custom Motor Car Finishing—II

Consultant on finishing problems reveals specific and detailed information on the operations involved in finishing new automobiles in large, well-equipped factories

By K. N. Kathju, M. S.

THE DOOR jambs, as finished in the previous operation, described in last month's issue, should be masked with either paper or cloth. Generally a wide adhesive tape is used for the purpose.

Lacquering Lower Area

Tack off the lower part of the car body very carefully, making sure it is free from dust, lint, etc. Next proceed to spray at least four coats (double) of lacquer of any desired color, reduced to a gravity of 15 to 20 LL Bé, at 80-deg. F. The air pressure in the tank and the air pressure at the nozzle of the spray gun must be maintained at 10 to 15-lbs. and 80 to 100-lbs. respectively.

In spraying four coats, it is not generally necessary to allow time between coats for air drying. After having been applied, the lacquer coats must be allowed to air dry eight hours.

Sanding Lower Area

When the lacquer has dried eight hours, proceed to water-sand, using No. 400 wetordry sandpaper. The sanding must be performed by a gentle but firm movement of the hand. Wash the lower part of the body and dry by blowing off with compressed air, making sure that the edge of the moulding which is closest to the lower lacquered surface is unquestionably clean.

Having obtained a clean smooth surface, the job should be inspected with a critical eye and, if necessary, it should be touched up here and there. For obvious reasons, the finished lower area of a car is masked with cloth or paper held in place by adhesive tape.

Lacquering Upper Area

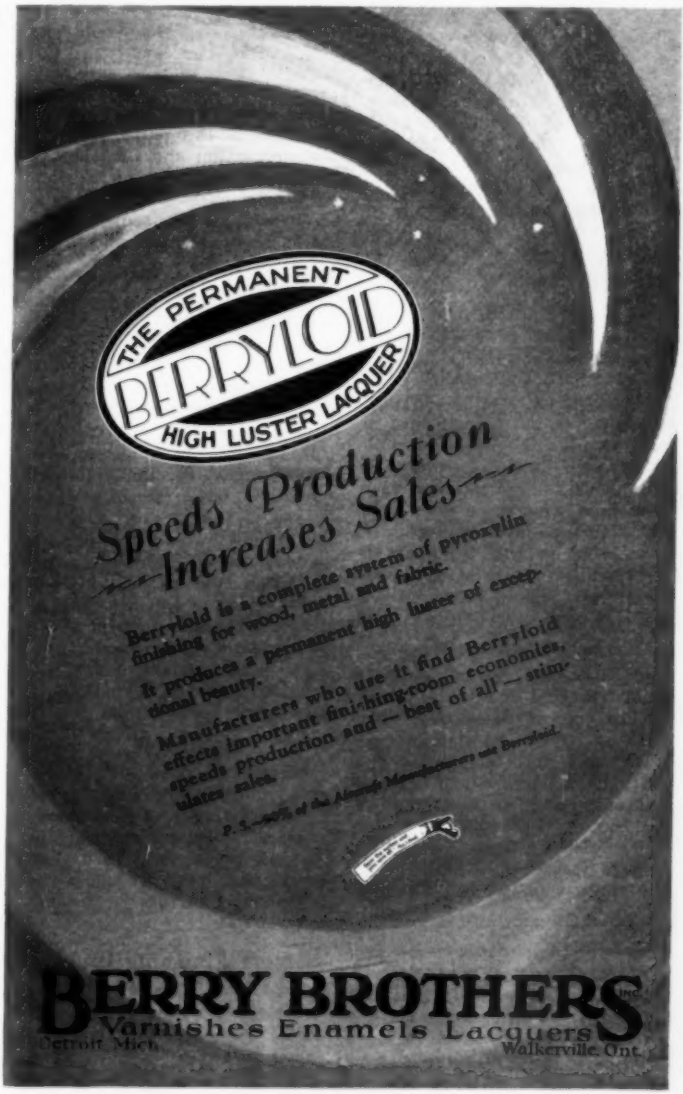
As previously noted, in open cars the upper portion is masked before lacquering the lower areas. At this stage, the upper portion of the open car is unmasked and wiped clean along the moulding with a rag dipped in high-test gas.

In both open and closed cars, the upper area is given four double coats of lacquer of any color, reduced to a desirable gravity—generally 15 to 20 LL Bé at 80-deg. F. These four coats are allowed to dry 8 hours at room temperature.

Sanding Upper Area

When the lacquer has dried eight hours on the upper half, proceed to water-sand the same as heretofore, with No. 400 wetordry sandpaper, as recommended before. Sanding must be accomplished by a gentle but firm movement of the hand.

Wash the entire surface thoroughly, using clean water and a chamois. Blow the entire surface almost dry with compressed air. As recommended previously, the upper half should be inspected in spot light and touched up if necessary.


THE PERMANENT
BERRYLOID
HIGH LUSTER LACQUER
Speeds Production
Increases Sales
Berryloid is a complete system of pyroxylin finishing for wood, metal and fabric.
It produces a permanent high luster of exceptional beauty.
Manufacturers who use it find Berryloid effects important finishing-room economies, speeds production and — best of all — stimulates sales.
P. S.—90% of the Aircraft Manufacturers use Berryloid.
BERRY BROTHERS Inc.
Varnishes Enamels Lacquers
Detroit, Mich.
Walkerville, Ont.

Mist Coat

Remove the mask from the lower area, clean along the moulding with gas, and tack-rag the entire body. Spray a rather "wet" coat of lacquer thinner, containing at least 5 to 15 percent of a "high boiler" like butyl propionate, ethyl lactate, cellosolv, etc. This has a tendency to level out scratches, etc., caused by using sandpaper in an effort to knock the orange peel.

Polishing

Roll a piece of nainsook or gauze shirting into ball about the size of a fist. Smear some rubbing compound onto it and proceed to polish, as recommended in previous articles. Polish a small surface at a time. Continue polishing until a high gloss surface is obtained. Then wipe clean with soft silk crepe-de-chine. If necessary, slick up with a liquid polish, wiping dry with soft silk, although this should be postponed until later.

Inspect; Touch-up; Wash

At this stage the car body is again inspected by spot light and touched up if necessary. The touch-up is allowed to dry four hours; then it is polished. The entire car body is then washed with silk soaked in a solution of water and toluol or high test gas, to remove the grease of polishing compound, especially around belt mouldings and window reveals which are still unfinished. However, at this stage the car body is sent to the trim line.

Final Touch-up

When trimmed the car is again returned to the paint shop for final inspection and touching up. The final touching up is done most laboriously with an artist's air brush, having lacquer capacity of about one tablespoonful.

Window Reveals; Mouldings, etc.

Until recently, most of this work was accomplished by laboriously masking and spraying. But heroic efforts of lacquer chemists have resulted in the successful use of lacquers that can very effectively be brushed. Some of this writer's brush lacquers, expressly made for the automobile industry, have recently been okayed for brushing mouldings and window reveals, by the manufacturer of one of the country's most expensive cars.

Two coats of brush lacquer are generally enough on mouldings and reveals. These are put on with soft, camel's hair ½-in. brushes, allowing 30 minutes of air drying between coats.

Striping

Striping is done with a No. 3 or 4 sword brush, using lacquers of contrasting colors, instead of japans. Lacquer stripes are permanent, whereas the japan stripes can be easily wiped from a lacquered surface.

Dependable
WOOD LACQUER
Made Since 1857
At our works—Newark, N. J.
Pioneer Lacquer Manufacturers
CHAS. COOPER & CO.
90 Worth St., New York—Works Newark, N. J.

Solving Finishing Problems —The Reward

Time after time the manufacturer of industrial finishes is called upon to solve industrial finishing problems. It requires the expenditure of time, money and

Do You Recognize These

96 NUMBERS 97

They indicate two products that are being used in the Finishing Department of many of the furniture factories in the U. S. A. today.

No. 96 Gloss Lacquer and
No. 97 Rubbed Effect Lacquer

These lacquers are especially constructed to fit the requirements of the furniture manufacturing trade and are giving splendid results.

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PYROXYLIN FINISHES, LACQUER ENAMELS

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material to accomplish these achievements.

First, the industrial salesman is called in to get in touch with the prospect; then the service man, and lastly the material which is to be used. All of these cost time and money.

I have had considerable experience in connection with these finishing problems some of which were solved only after many weeks of painstaking experimental work—after special batches of material had been made and used. Sometimes "secret" finishing processes are tried out. All this is given to those seeking finishing information, and the work is continued until their problems are solved.

In return the manufacturer of industrial finishes naturally expects some compensation in the way of business. However, I have seen cases where all this valuable information was taken in by the prospective customer and given to a friendly salesman who belonged to some rival company. Samples of the special material were even given him to be matched.

In my estimation this is absolutely unfair. The one concern doesn't spend, or even try to spend, an honest dollar to help the customer solve these finishing problems. By all means be fair to the manufacturer of industrial finishes and you will be fair to yourself, and profit accordingly. —Joseph Cowan.

New Touch-Up Airbrush

The accompanying cut shows the new Paasche touch-up airbrush, especially designed to meet every demand of the decorator and embodying all the Paasche multiple-head triple-action features.

According to the manufacturer, the Paasche Airbrush Co., Chicago, Ill., this new airbrush

achieves a magic blend and an amazingly smooth finish in coloring, antiquing, stippling, stenciling, veiling and tinting any articles requiring a "selling finish." It has a triple action and produces from a fine line to a wide fan spray.

Automobile
LACQUERS
Free from gum
Give dependable finish
Established 1857
CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

RAUX
KETZER GUM RESINS
Improves Gloss, Flexibility, Adhesion and Toughness in any lacquer.
Prices and samples on request.
ROBERT RAUH, Inc.
480-8 Frelinghuysen Ave. Newark, N. J.

TEMPER

DO ANY of your workmen—good mechanics that they are—buy their tools at the 5c & 10c stores?

Of course you laugh!

Not but what they could do it and save money if they wished. Saws, hammers, bits, chisels, files, vises, hatchets, and many other articles can be purchased there—at extremely low prices. They're good tools too, considering their cost.

Real workmen, however, know that cheap tools are never satisfactory—that they lack sturdy quality—the cutting edge—because they are lacking in *temper*.

Lacquer is an important tool in your business. It, too, can be purchased at an astonishingly low price sometimes. But the careful buyer, like the good mechanic, knows that cheap lacquer lacks "long wear and satisfaction"—in other words, *temper*.

The

ROCKFORD VARNISH

Company

ROCKFORD, ILL.

"I have spent the past three months in the investigation of basic colors and their use to the finisher. I am willing to stand behind any formula on the grounds that each one has been employed and used successfully."—
THE AUTHOR.

Stain Colors and Color Mixing

Listing a variety of dye colors for use in making water and alcohol-soluble wood stains, and revealing specific information on how to mix these colors to obtain certain definite results

By "The Colorist"

THE BASIC dyestuff plays an invaluable role in the industrial finisher's life. It is of the greatest use to the manufacturer of alcohol and water soluble wood stains, and to the makers of colored shellacs and lacquers.

First of all let me define "basic dyes." The basic dyes are a class to which all early dyes belonged; they are remarkable for their great tinting power and in most cases for the brilliancy of shade they yield. With rare exceptions basic colors are fugitive to light. The following dyes are the most "practically useful" and outstanding:

Orange: Chrysoidine (Red & Yellow Shade).
Yellow: Auramine.
Blue: Methylene Blue conc, Methylen Blue Zinc Free, Victoria Blue.
Violet: Methyl Violet, Crystal Violet.
Brown: Bismarck Brown (Red & Yellow Shade).
Black & Gray: Spirit Soluble Nigrosine.
Green: Malachite Green, Emerald Green.
Red: Safranine, Rhodamine, Fuchsine (Magenta).

The above dyes are soluble in both water and alcohol with the exception of safranine and methylene blue. These two dyes are only slightly soluble in alcohol, therefore their value lies in their use as water-soluble stains.

Note: Methylene blue zinc free may be used as an alcohol-soluble stain, but not the methylene blue containing zinc.

Now I shall demonstrate the mixing of the above mentioned "standard dyestuffs." The colors may be mixed as follows to obtain a brown mahogany shade.

Bismarck Brown, Red Shade	15½-oz.
Methyl Violet, 5 B	½-oz.
Malachite Green	½-oz.

If a red mahogany is preferred, ¾-oz. of fuchsine can be added to the above poundage of Bismarck brown red shade. The above formula may be dissolved in either ten gallons of alcohol, or hot water.

A light brown shade is obtainable by the following formula:

Chrysoidine Y. S.	15-oz.
Methyl Violet 5 B.	½-oz.
Malachite Green	½-oz.

The above formula is soluble in either ten gallons of alcohol or hot water. For spirit soluble blacks or grays "nigrosine spirit soluble" is recommended.

The following mixture may be used either as an alcohol soluble or water soluble black stain.

Bismarck Brown R. S.	8½-oz.
Malachite Green	3¼-oz.
Methyl Violet 5 B.	4 -oz.

For greens Malachite green is invaluable as a water and alcohol-soluble stain. If a brighter green is desired the Malachite green can be shaded with Auramine, or Em-

More COVERAGE PER GALLON

IN using Duco you pay a minimum price for area actually covered. That is the final test of price.

You have toughness, durability—that is, general lasting qualities—which cannot be exceeded.

Duco is a full-bodied material with great filling and surfacing qualities; one which sands and rubs easily and gives as a final result a smooth, velvety surface.

* * *

Du Pont offers Duco in Clear, Color and Flat, and also a full line of paints, varnishes and enamels.

DU PONT

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erald green can be employed in place of Malachite green.

For blues, Victoria blue is applicable as both a water and alcohol-soluble stain. If a cheaper priced and duller shade blue is wanted, the following formula may be used.

Malachite Green ..... 12-oz.
Methyl Violet 5 B..... 4-oz.

The above poundage is soluble both in ten gallons of alcohol or hot water.

The Rhodamines, Fuchsine and Safranine give any desired shade of pink, but the following mixture gives a pink of extreme brilliancy:

Rhodamine Blue Shade..... 6-oz.
Auramine ..... 6-oz.

Dissolve the above in ten gallons of alcohol or water.

Now that I have demonstrated the art of color mixing I would also like to convey the following to the reader's mind:

1—If unusual difficulty is encountered in dissolving the water-soluble stains ½ to 1 gallon of acetic acid can be added. This will help the solubility of the colors.

2—In making a solution of Fuchsine, do not use acid. Also use a non-acid shellac in the finish, as acid dulls Fuchsine.

3—For bright shades such as greens, pinks, blues, white shellac will give a better finish than orange shellac.

4—If a colored shellac is desired, sufficient shellac may be added to the alcohol soluble stain solution until the desired thickness is obtained.

5—The poundages recommended may be increased or lessened according to the depth of shade desired.

To the author as well as to the reader basic dyes are very colorful.

Note by Editor: The author has supplemented this article with a list of dyes and manufacturers which we are keeping for reference, in case any reader desires further information.

At Chicago Radio Show

The beauty of fine cabinets is selling radio sets. This was clearly demonstrated at the recent Radio Show in Chicago, where nearly all of the cabinets displayed were of walnut—featuring walnut tops and walnut panels, walnut doors and walnut sides, while some sets were entirely of walnut.

Sets at all prices sold because they were fine furniture as well as fine radio. The electrical interior or "chassis," although admired, was not understood by the average visitor to the show. But there was full appreciation of handsome panels, veneered with burl and stump wood.

One fine radio set, which was shown, is built as a corner bookcase and secretary in old colonial style. In the upper portion, glass doors open to reveal two book shelves and the single-dial control. Above the shelves, in the semi-dome of the cabinet, is the speaker, and below the shelves, a writing desk. In the lower part of the cabinet, a cupboard, with paneled doors, provides space for radio accessories. The entire piece is finished in antique walnut.

Radio cabinets, made as fine pieces of furniture, appealed especially to the women buyers. And, coupled with improved appearance, was improved and simplified operation obtained with single-dial tuning. This also ap-

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GLOSSY—FLAT

Our glossy body lacquer can be polished to produce a very high lustre. It will not chip or check—sprays freely.

For a dull-rubbed effect our flat lacquer produces an excellent finish at low cost . . . where competition is keen this particular material will be found extremely advantageous.

These lacquers are not an experiment—they have been tried and tested and are being used very successfully by hundreds of furniture manufacturers. We spent years developing them, and were firmly convinced that they would accomplish all that would be expected of them before we offered them to the trade. Liberal samples on request.

Indianapolis Varnish Co.

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Have you tried

HAF-AMEL?

In White or Colors

Covers in one coat—Sets to touch in 1 hour—Can be wrapped in 5 hours—Will not print.

Wm. S. Hatten Co.

Manufacturers of

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165 North May Street
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pealed to women, as did the type of set which is plugged in at an electric light socket and uses no batteries. About 30 per cent. of those shown were of this type, while the rest, in the lower price ranges, used batteries or eliminators of one sort or another.

An attraction from the standpoint of novelty as well as beauty, was a set installed in the instrument board of an automobile. It used the battery of the car as an "A" battery and carried "B" batteries under the floor. A special instrument board was used on which the radio controls as well as the car instruments were installed.—News.

Breakfast Sets in Lacquer

Old maple breakfast sets finished in lacquer according to the following schedule, present an attractive and enduring finish:

1—Water stained. (Old maple stain.)
2—Coat of shellac. (White shellac with little touch of orange; a thin coat.)
3—Sanded smooth.
4—Shaded with lacquer shading stain.
5—Coat of clear semi-gloss lacquer.—Joseph Cowan.

Iron Fillers

Where iron fillers are furnished in drums or barrels, there is often considerable trouble caused by the hardening of the material in the container. If the top of the filler is kept covered by water this trouble can be overcome, and the water will in no way affect the filler beneath it.—D. C. Y.

Most floor paints for factory service are gloss paints, made of a pigment capable of resisting wear, with a hard resin varnish as the vehicle.

Invite us to show you

Sun Flat Lacquer

We will display our goods at our expense, and give you practical advice. How best to use.

White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.

Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Aluminum, Dull Finished

We want to finish the bright aluminum which we buy in rolls, like the dull sample enclosed. We have to finish it in the roll as it comes from the mill, and not cut it up into pieces. It is finished this way so that it will hold an almost invisible film of water, which is part of a process we use here. The bright stuff will not hold water. The raw material has been supplied by the Aluminum Co. of America, who state they do not make this finish which we want.—D.&C.

Our laboratory at Kansas City tried to duplicate a sandblast or oxidized surface on burnished aluminum with the use of a special flat lacquer, and obtained remarkably good results.

We find burnished aluminum, coated with this special flat lacquer, has better "retention of water film" qualities than even the oxidized strip of aluminum you furnished.

We can, also, use a special varnish for the purpose, and the aluminum roll can be coated by passing through a roller machine. —K.N.Kathju.

Questions Use of Flint Sandpaper

I was somewhat surprised to read in September issue, page 62, the article by Mr. L. A. Johnson, a Chicago auto painter, who tells how to refinish automobiles profitably. It is a very rare thing for us to come upon an auto painter who recommends the use of *flint* sandpaper for automobile finish sanding.

Of course, it does not make any great difference to us what kind of sandpaper automobile refinishers use, because we make both flint sandpaper of the glue-bond type, and waterproof sandpaper, and I dislike to appear to continually criticise. On the other hand, I feel that a man who writes on this subject incorrectly is capable of doing a certain amount of harm.—W. P. Stewart.

Marble Effect on Wood

I am interested in obtaining information about a practical process of obtaining a marbleized effect (production basis) on small wooden table tops, either with lacquers or enamel colors.—J.E.G.

The following formula has proved practical for producing marble effects on wood or metal surfaces with lacquers: The first operation is to coat the surface with an application of white lacquer enamel. When thoroughly dry, prepare a mixture of glycerin thinned with 10 percent water; spatter this mixture with a spray gun, which permits spattering, or by some hand process. Then, with either finger or a piece of

!

A most unique and distinctive finish!

Pioneered as a leatherette finish for radio horns, its variety of attractive combinations has brought it into use for many other articles, such as radio cabinets, furniture, fixtures, novelties, toys, etc.

Ease of application—uniformity of pattern—combinations to suit your particular requirements, are outstanding qualities of BREVOKRAK.

Thorough-going demonstration made at your plant if desired.

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611 Ryan Bldg., St. Paul, Minn.

BREVOLITE lacquers and lacquer enamels for the good finishing trade are hard wearing, wood covering materials.

cloth, spread spatters to the grain effect desired. By various motions with the finger or cloth, wonderful marble patterns are produced.

The next operation is to spray a light coat of any color, according to the color effect desired. When this coat has dried thoroughly, wipe the surface with a moist rag saturated with water. This operation will remove the glycerin solution, leaving a wonderful marble pattern effect. If any further tonings with various colors are desired, they should be applied transparently, so as not to disturb the marble grain pattern produced.—Binks Spray Equipment Co.

Sanding Undercoats Wet or Dry?

I note the substance of a very timely article in the September, 1927, issue of INDUSTRIAL FINISHING (page 70), "Waterproof Sandpaper for Furniture and Fixtures," sponsored by Mr. W. P. Stewart, in which he takes me to task for not advocating the use of "wetordry" sandpaper in my article, "Sanding Between Finishing Coats" (page 24), of July, 1927, INDUSTRIAL FINISHING.

I also note a suggestion of irritation in his article in which he seemed to resent this fact, that others writing on the subject and woodworking industries do not seem to advocate its use either, and he assumes because some writers do not mention or recommend the use of "wetordry" sandpaper in wood finishing that they are ignorant of its existence. Such is not the case, however.

It is these facts that prompt me to write and help if possible to clarify the situation.

I have no illusions regarding any abrasive and the facts set forth are the results of practical tests—considering production in this field. As a matter of truth we use "wetordry" sandpaper, especially when finishing automobiles—and it is no small branch of our business in taking care of the rolling stock for the company I am connected with. It is hardly necessary for me to state it would be folly to use any other method of rubbing these surfaces.

But no mistake should be made of this fact, that the problems of the automotive industry are in a sense a great deal different from the general line of woodworking industries. What is an absolute necessity in the automobile field of finishing does not answer the problems of wood finishing, and most every coat of material applied to an automobile can be sanded successfully with wet sandpaper, whereas in wood finishing, I ask, is there any practical workman who would advise using a wet sanding on the sponge, stain, filler or shellac coats? I believe not.

Neither do I consider wet sanding in the primary film coat a safe procedure, unless it is done by expert rubbers. A strong-arm novice would play havoc with this film coat, as in mass production—and where human element must be considered in water rubbing and water sanding on undercoats in wood finishing—there is that ever present hazard of easily cutting through the surface and injuring the finish, due to action of water on wood surfaces and veneers, which causes patching and doctoring of the finish, and this always interferes with production.

But some may be prompted to ask, "Why not use this paper

dry?" My answer to this would be, "Wetordry" sandpaper does not answer our problem as well as a double face split finish sandpaper given a humid dampening on the back to render it flexible for sanding edges, mouldings, corners, etc. Wetordry sandpaper, owing to its water sealed back, cannot be brought to a degree of flexibility that a split-finish paper can.

Mr. Stewart's explanation of the liability of double-face finishing paper shedding its grit and scratching after moistening does not concur with the facts of my experience, where the paper is kept humidly damp while in use. My experience has been that "wetordry" sandpaper will not in a full sense take care of the sanding operations in wood finishing, but it is most successfully used as a means of replacing the water-rubbing operation on surfaces where a rubbing machine cannot be used to advantage.

These are some of the outstanding reasons drawn from my experience in sanding and smoothing undercoats, and I am sure if Mr. Stewart will make a survey of conditions in this field he will find many reasons why "wetordry" sandpaper has not revolutionized the wood finishing industry, as it has the automotive and kindred lines. — Edward C. H. Rottmann.

Stains, Dyes and Light Fastness

Referring back to September issue, page 68, and reading "Color Articles Questioned," it appears that a certain "Research Chemist" has been mislead by reading Mr. Harkavy's article in the May number (page 34) and my article

ZELLAC

How Old Is Your Name?

If your firm name is a new one, you appreciate the value of long-standing reputation, in dealing with a company that sells production materials to you. If yours is an old name, you know the value of linking two reputable names together!

The name Zeller has stood out prominently in lacquer using fields for 50 years as a leading pioneer of exclusive lacquer making. The experience of two generations of Zellers—coupled with a big plant of the most modern character—insures you of quality, economy and unsurpassed finishing results with our specially-prescribed grades of Zellac lacquer and lacquer enamels. Send us your finishing problems, and let us advise you.

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FINISHEEN

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"FINISHEEN" combines the qualities of Shellac, Lacquer and Varnish.

Gives a tough, lustrous finish, dries fast and requires little sanding. Will spray, brush or dip.

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CORPORATION
Est. 1849

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in the March issue (page 44). A few more comments on aniline dyes are therefore desirable.

Mr. Harkavy is connected with a concern that is well posted on wood stains and that has worked with them for many years. The colors he has selected are the usual ones employed for this purpose. His article can be accepted, without question, as giving reliable information.

My article demonstrates in a general way the approximate light fastness of the colors used in wood staining, and does not attempt to advise in the selection of colors. The particular dye used depends on the desired effect, the market situation, the personal equation, etc.

The reds, for instance, are not completely interchangeable; often the desired effect can only be obtained by adding one of them—no substitute color will produce the same result. Further, a brilliant green cannot be had from naphthol green. Anyone familiar with the blending of dyes will recognize the table in "How Fast to Light Are Dyes?" (page 46, March issue), as giving a representative, but not exhaustive, list of the ingredients of his mixes.

The issue is raised that there is no relationship between tests on wool and tests on wood. In an exact sense this is true; but before we try to discard wool tests as having no significance in staining practice, it is well to examine the conditions surrounding the application of dyes to wood. There are three phases to this question. We are concerned with the fixing of the dye to the fiber, with the alteration of the dye by the wood or its ingredients and with the influence of the finishes on the dye.

Acid dyes do not fix themselves

completely to the fiber in the ordinary wood-staining processes. I had the problem of finding a stain which could be used without a finish, and yet not bleed through into a white label pasted on the wood. Although all the dyes used could be attached to wool so as not to bleed, no wood stain with similar properties was ever evolved. This goes to show that there is no definite mordanting or biting action which gives dyes a superior affinity for wood. In other words, there is nothing to indicate that we should have a remarkable variation between wool and wood tests on this score.

The next point is the influence of wood (or any of its components) on dyestuffs. In some of the oil colors, we find a decided alteration when they are applied to wood. Most of the oil yellows are changed to a dirty brown through the action of pine. In all the years I have worked with stains, I have never observed any similar effects with acid colors. I know of no evidence that would lead me to expect any great variation in the light fastness of acid dyes applied to wood, and acid dyes applied to wool.

The use of finishes distinctly alters the conditions prescribed by the wool tests. In the tests it says that the skein was exposed to the open air, yet with finished wood, obviously the dye cannot be exposed to the open air. As finishes protect a dye from the air we would expect the light fastness to be improved thereby. Experimentation with oil stains leads one to believe this conclusion to be sound.

There is a further effect with finishes, and that is the matter of bleeding. As some of the acid dyes are alcohol soluble, a shellac

IDEAL FOR FREQUENT CHANGES OF COLOR

The Handigrip Spray Gun is easier to clean than a brush. That makes it ideal for frequent changes of color or material. You don't have to take it apart. That is partly why it doesn't wear out, doing good work when old as when new.

Handigrip has many advantages for securing quality finish on wood or metal. Handles lacquer, paint, enamel, varnish, or wet porcelain. Send for complete catalog of spray painting equipment. Write today. Kindly address Dept. F.

PLUMMER-HUFF COMPANY
NAPOLEON, OHIO

covering is bound to lift any of the soluble dyes present. This factor, however, is too slight to have any bearing on the significance of wool tests. The main point of the discussion is that finishes protect dyestuffs from the air and enable us to get a greater light fastness on wood than on wool.

Wool tests are just as significant to the wood finisher as the laboratory tests on steel are to the structural engineer. Practice involves departures from experimental conditions but, in each case, knowledge as to the real properties of the material under consideration is gained. Wood staining involves too many technical variations for any one ever to reduce the subject to the precision of a yard stick.

The article "How Fast to Light are Dyes?" expounds what Mr. Harkavy means when he says acid dyes are fairly fast to light. From the far severer conditions of wool tests, the finisher can learn what to use, what to avoid and what he can reasonably expect from the shades whose compounding Mr. Harkavy discusses. —George A. Prochazka, Jr.

Industrial Finishing Salesmen

To my way of thinking, the selling of industrial finishing materials should be done by industrial salesmen who have been trained and educated to service the industrial field.

Nothing will do more to injure the chances of obtaining a bigger and better industrial business than to send a "dealer salesman" after industrial business. Probably the same would apply the

Vel-vo-lac

Better than Shellac

Made on a basis of pure shellac with pure nitrocellulose added, Vel-vo-lac contains no substitute gums whatever.

It sands in half the time, needs less sanding and is *waterproof*. Costs less than shellac but does more.

Send for free working sample and quotation.

JAMES B. DAY & CO.
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Manufacturers of
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SHOOT 'EM!

KILL off finishing bugaboos! Do away with those bandits—Peeling, Cracking, Blushing, Bubbling, and the rest of that vagrant crowd. Load up your trusty gun with ALAKA and shoot! Your finishing troubles will fall dead at your feet.

Drop us a line asking for the full data on our line of ammunition. Go gunning for trouble. Our Booklet, Finishing Facts, will undoubtedly improve your aim. Ask for it.

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Are unsurpassed for smoothness of finish.
Will stand any lacquer without "popping."
A generous trial sample sent on request.

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INDIANAPOLIS, IND.

other way around too, that is, sending industrial men to call on dealer trade.

This practice not only tends to decrease sales, but it places the buyer in the wrong mood for buying. He may be more or less at sea as how to finish his products in the most economical way. Industrial salesmen should follow the industrial trade exclusively and intensively.—C. Joseph.

Old World Changed

A furniture manufacturer, who recently returned from a trip to England, reports that he was greatly surprised to see over there, the number of spraying and dipping methods used in various finishing rooms. This shows that the old world has changed also, having fallen in line with methods of industrial finishing.—Nawoc.

Leading automobile manufacturers have checked up on the extent of their ventilation for the positive removal of paint fumes and gases—a good example for all other industrial concerns using finishing materials to any extent. Insurance companies are showing a particular interest in this work and are recommending and requiring careful ventilation whenever they are concerned in the risks.

If there were no time required for the manufacture of a product, nine-tenths of the hazards of manufacture would be eliminated.

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Used for staining such woods as Sap Gum, Sap Walnut, Tupelo, Birch or any wood which has hard and soft fibres which makes uniform staining difficult.

Our Uniforming Stains will give you a serviceable finish, colors clear in tone, and uniform throughout.

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"Here are some ramblings about clean work; before having time to revise them and make a connected article, I have had a call to go out on a service case for a few days."—

Harold C Booth

Cleaning Before Japanning or Enameling

Emphasizing the importance of thorough cleaning, suggesting suitable methods of cleaning and recommending additional precautions which are necessary for a satisfactory job of japanning or enameling

By Harold C. Booth

IT IS JUST as essential that metal surfaces, to be enameled or japanned, should be clean and free from dust before the color is applied as it is in plating, or any other method of finishing.

For articles on which the color is applied by a tumbling-barrel action, it is well to clean the surfaces thoroughly with a chemical cleaner and then dry them by heat. This can be done in other tumbling barrels at no very great cost, or it can be done by dipping in a hot solution of the cleaner, rinsing in hot water, and drying in a heated conveyor or other dustless outfit.

Sawdust Not Effective

Someone may ask, "Why not dry it in sawdust?" It is not impossible, but the unfavorable condition is the fact that most sawdust is not properly graded, so as to exclude that very fine slit-like dust that adheres to the surface whether wet or dry. If this very fine dust is on the surface to be finished, it causes a spotting or lumping of the color. In time this will wear off, due to the dust being loose and moving under the film of color.

In our plant we have had several jobs for experimenting on which there was no noticeable dust, but when the work was japanned we could see, with the naked eye, the ridges made by the dust.

Avoid Atmospheric Dust

This question of applying color to clean surfaces is a perplexing one in many cases. The writer has known of cases where the work was cleaned thoroughly, but due to atmospheric dust in the room, the finish was poor. If your shop is in a dusty location—either from factory operations or street dust—it probably would pay to use a washed-air system of ventilation. In this way, by keeping windows and doors closed, only clean air which has been washed is allowed to enter the finishing room.

Perhaps the best method to follow in this finishing proposition is not to allow any more work to enter the finishing room than can be handled completely on a production basis, so as not to let it stand. This will keep all work, previously cleaned, moving rapidly enough so that dust cannot collect on it.

Of course, extreme measures are not necessary in all cases, as there are probably five or six times as many jobs that do not require extreme care in handling, as there are that do. These will include such jobs as toys, wood turnings, cheap hardware, etc. The jobs that require the care are the more expensive lines, for the discriminating trade who pay a little more and want better quality for it.

Recommended Precautions

There is another reason why surfaces to be finished should be chemically as well as apparently clean. This is due to the chemical reaction on fillers, varnishes and the like, caused by oxides, oils or other surface uncleanliness. This may sound a little far-fetched, but I mention it because of the idea that many rule-of-thumb finishers have the idea that a color covers up everything. It does for awhile, until the chemical reaction has started; then there is usually very little color left at that particular spot.

Any sales engineer for a paint or varnish company will bear me out in the statement that "many times the coloring agent is blamed for some carelessness in the finishing operation, and that it is not always possible to locate the source of the trouble, although the nature of it is known."

When applying color, the presence of any dampness should be entirely eliminated. The writer knows of one case where the finish is applied on heated articles in summer, due to the average summer humidity being rather high. This heating of the work just before color is applied does away with moisture blisters at some future date.

Chemical Coloring of Metals

Production man calls attention to chemical means which may be employed in a limited way, at low cost, for imparting certain colors to the surfaces of certain metals

By H. D. Albertson

FREQUENTLY occasions come up where it is desirable for those engaged in production to be able to color metals by chemical means. By "coloring" is meant a chemical process, as contrasted to painting or other methods of putting on a film of finishing material.

It is possible to produce blacks, silvers, blues, browns and yellows on cleaned metal parts by chemical means, which are more or less involved. Some of these means require the use of materials not often obtainable in town drug stores; others are too expensive for use in connection with everyday factory goods on which it is desired to set off certain parts by means of an inexpensive color.

This article will not deal with coloring in its broader scope, but will be confined to two phases, namely, a brown color on bronze and brass, and a blue color on steel.

Making Bronze Brown

Immersion for a few seconds will give a cleaned bronze article

Use those rags again and again!

Old rags are new rags in a jiffy now, thanks to this specialized "American" equipment. And at a fraction of your present expense, too. Write us for the facts and figures.

THOSE greasy, oily wiping rags—do you throw them away? Or burn them?

You *can* reclaim them, you know, and use them again as many as six or eight times. Easily, if you have the proper equipment. Many finishing plants are saving hundreds of dollars annually by reclaiming their wiping rags the "American" way.

Be sure to get all the facts about this specialized "American" equipment. Let us show you how much you can save by using those oily, sticky rags over and over again—each time soft, new-like, and thoroughly clean. Write—our specialist will call.

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47-93 Sterling Road, Toronto 3, Ont., Canada

a brown color, if there is at hand a crock of "liver of sulphur." Liver of sulphur is sulphuret of potash, which is obtainable at all drug stores in ¼-lb. packages. This is dissolved in water, preferably in an earthen vessel. That is all there is to it. It is cheap, harmless to the skin and efficacious.

Unless the article or articles to be colored brown are large or numerous, a gallon or two of water and only a portion of the potash will suffice. The solution will keep for several weeks, if thoroughly covered, but it is necessary to protect the unused potash from the air by sealing with paraffine—for instance, in a glass bottle.

The depth of color depends upon the strength of the solution and the time of immersion. This has to be tried out each time coloring is done, but that is a simple matter since the color is unchangeably fixed as soon as the drip has run off the pieces. For a few pieces, they may be held by hand over the crock, while they drain off; for a quantity, a drain shelf can be arranged. After the solution has stood for some time, the color coat is not as clean-cut as with a fresh solution, but care in draining and dipping will keep the results satisfactory.

Brass and bronze castings for browning should be well cleaned before dipping. Where sand has been left in corners, the desired effect will be lost, and at some future time this sand may fall out, leaving pale yellow against the brown. An excellent method of cleaning is to use a revolving wire brush, pressing this firmly all over the surface to bring out the light yellow of the metal to a uniform background.

Making Steel Blue

Bright steel can be given a "gun metal" blue by immersion in liquid nitrate of soda. Like most soda products, this one is cheap and ordinarily available. The crystals melt at 600-deg. F., and it is customary to heat the solution somewhat higher—even up to 900-deg. F.—to hasten the action and to make up for the cooling that occurs when a batch of cold metal parts are immersed.

A metal tank is used for this purpose—a household iron kettle will do for small quantities—and heat is applied by any convenient means. It is necessary to have continuous heat in order to insure uniformity of results and to make up for the cooling of new parts put in. Depending upon the size and quantity of metal parts and the strength of the solution, the immersion may be timed anywhere between three and five minutes. The steel parts are then withdrawn and dipped in oil to cool them and to fix the color.

The parts that blue most successfully are those of sheet steel which is bright and smooth. They can be given any shade of blue from very light to a deep blue that is almost black. With the oil dip following, such parts become rust proof for an indefinite time, under all ordinary atmospheric conditions.

These two methods of coloring are very simple and well adapted to small-lot production. They are equally valuable on large quantities, if a little "tooling up" is done. The two colors are formed naturally on their respective metals and they do not require a lacquer coat to keep them from oxidizing. The two colors are especially useful in connection with some woodworking branches,

Strip Japan in Minutes Instead of Hours

Excuse the picture. I drew it myself. What I am trying to illustrate is that INTERNATIONAL No. 2B is the fastest all around japan, enamel and paint stripper I have ever met in my 27 years' experience.

Above is an illustration of how No. 2B led the second best stripper in a competitive test. Now No. 2B won't remove every japan in 12 minutes. But it WILL strip any kind of japan much more quickly than most anything you can find.

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where a few castings or metal parts are used as the hardware fittings or for ornamental purposes.

Color Easily Scratched

Colors of this sort differ from paints and other coatings, in that they will not stand the same amount of abrasion. Being thin surface colors, they will rub off and show the bright metal beneath if subjected to considerable friction. This is not a serious matter if the application is well chosen, since, on such articles as bronze book ends and the blued barrels of boys' air rifles, the original color may be observed to be practically as good as ever after four or five years of use—showing that it is reasonably permanent against ordinary handling.

These same colors may be produced by heat. A bronze or brass casting that has been cleaned may be given a brown color, or irridescent colors, by heating in any convenient manner. The same is true of bright steel parts that are to be blued. But the appearance of "depth" is rarely obtained with heat as with chemicals, and the heat method is open to the objection that it is hard to control the flow (without elaborate equipment), some parts being heated more than others and consequently showing darker spots.

Where coats of finish cannot be used, or are not desired, the two dipping processes outlined will be found to answer manufacturing requirements.

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Baking Oven Management

Some time ago our concern sold a tumbling barrel to a small firm for use in japanning malleable castings. I have forgotten the exact production rate per day, but it totaled to a fairly high weight.

When the production man first tried out the barrel, he got wonderful results, and he was all praises. Imagine my surprise when, about two weeks later, I received a letter that things were not right; he was not satisfied with the barrel.

Upon investigation I found that he had followed my advice about drying the work in an oven, but had made a bad slip. In tumbling color on various jobs, the articles are usually dumped on screens and shaken out so as not to lie in heaps. He apparently had followed instructions, but still the finish would not bake dry and hard.

After watching the process for an hour or two I was puzzled, because everything seemed to be done "according to Hoyle." In fact, I left the shop, believing that the process was not practical for that particular work.

A day or two later, on a chance visit to the plant, I happened to notice that the ovens were extremely crowded. I began to scent the trouble! He had made a set of wooden frames for the screens and had mounted these in the oven on cross rails of steel. I had not noticed particularly on the other visit, that these wooden frames took up about half of the available oven space.

What was happening was that in order to get the necessary carrying capacity, these frames were made of 2 x 2-in. lumber, with cross slats to support the screens. Naturally, the volume taken up by

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them was very great and the solid wood, over such a great area in the oven, was blocking the circulation of air.

After trying out a sample screen made up of light structural steel, we found that not only did the air circulate better, but that the upkeep on the screens became almost nothing. The steel became coated with the color but could be cleaned easily, whereas the wood absorbed it, up to a certain point, and was always in a messy condition.

We found also that the light structural steel frames, taking up very little space, increased the oven capacity for work, and also, due to the metal taking the heat, there seemed to be a more even circulation of air and the oven was about the same heat all over.

It seems a simple thing to use structural steel in the place of wood, but since that experience, I have found several other firms that thought they were economizing by using wood, which is cheaper in first cost only.—C. B. Harold.

Scratch-Proof Lacquer?

A San Francisco (Calif.) firm has developed and just started the manufacture of what is claimed to be a new development in the lacquer industry. This product consists of a material that carries the metal in it; the company claims that, for auto painting, and with proper application, this finish will last the life of a car.

A metal surface coated with it the new finish was struck with sharp iron, hard enough to dent the metal sheet, but the blows failed to scratch or mar the lacquer surface.—C. D. Y.

Baking Finishes Electrically

We are one of the world's largest manufacturers of steering gears, and our product is used on many of the higher grade cars. As the finished appearance of the steering column must be in keeping with the finish of the car itself, finishing is an important step in the manufacturing processes. When we moved into our new and enlarged plant, we felt the need of an improved method of enameling and baking our steering columns.

One continuous conveyor enamel oven with automatic dip, designed and built for us by a well known engineering firm, takes care of our entire production. In selecting the type of oven for this purpose, we considered the following points of greatest importance; uniform good quality of product, continuous production, reduced cost of operation, and conservation of floor space.

The new electrically heated oven replaces three gas-fired ovens, in which the steering columns were loaded on racks and placed in the oven to bake. In these ovens, temperature was controlled by hand, and the quality of finish varied in direct ratio to the skill and watchfulness of the attendant.

Automatic Control

The new oven, being electrically heated and automatically controlled, maintains a constant correct temperature. This, coupled with the fact that the columns do not have to be handled from the time they are put on the conveyor until they are taken off again finished, has practically eliminated rejections.

Heat is turned on at starting time, columns are started on the

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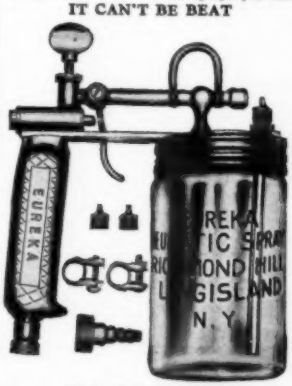

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"Solvent" Gum Oil is a vegetable product which is used with any pigment as you would use oils, turpentine and dryers in mixing same, but none of which are necessary when using "Solvent" Gum Oil.

Manufacturers of industrial products also find same very valuable as a sealer against moisture, acid or sulphur fumes, as well as producing a rich and lustrous finish wherever applied.

This preparation when used with lacquers, or as a vehicle for aluminum or other bronze powders is unsurpassed. It is easy to brush or spray.

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conveyor, and, by the time they have passed through the dipping tank and drained—requiring about 25 minutes—the oven is up to temperature.

A meter installed on the heating elements of the oven shows that the average current consumption is 44.8 kilowatts per hour. At 1¼ cents per kilowatt hour, this current costs 56 cents per hour. In an hour's time we enamel 266 columns, putting on two coats.

As the columns weigh 1¾ lbs. each, we bake 8.3 lbs. of product two coats for one cent, or 10.4 lbs. per kilowatt consumed. Current costs slightly over 12 cents per 100 lbs. of finished product, and labor costs 51 cents, a total of 63 cents per 100 lbs.

Space Saving

The entire installation now occupies 8x15 ft., requiring only one-tenth as much the floor space as the former equipment. This saving, at a valuation of 60 cents per square foot per year, amounts to $648.00 per year. But the value of the additional storage space, and the greater efficiency in moving material, due to the absence of partitions, is also important though it can not be estimated.

While we have no accurate records of the gas costs for the old ovens, we are already convinced that they are far more than our present electric heating cost. We know that the old ovens consumed about 650 cu. ft. of gas per bake, and, baking being a batch process requiring 1 to 1½ hours per batch, fuel was wasted by ovens being idle between bakes, and heat was wasted while doors were open. No such condi-

tion occurs in the present electric oven.

New Engineering Features

The oven has several features which are entirely new in this field of engineering. The oven itself is in the form of an inverted U, and the top is insulated with a 4-in. layer of rock-wool. Heat is supplied by General Electric units, and fumes are drawn off by a small fan on the opposite side.

The heat flows in a direction counter to the direction of work moving through the oven. The finished work is cooled by intake air, the baking heat is reached at the apex of the U, and the incoming work is brought up to temperature by what would otherwise be waste heat.

The insulation is such that workmen, returning in the morning, find a temperature of 200-deg. in the oven after 16 hours of idleness. The normal temperature is 500-deg.

The Cycle of Work

One man feeds work on the conveyor. It goes through the dipping tank, drains 20 minutes, then goes through the oven, where it bakes for 45 minutes. The entire cycle is 90 minutes.

The conveyor ascends from the dipping tank to the oven at an angle of 70-deg. This feature effects an important saving in floor space, as the usual ascent in conveyor ovens is at an angle of 45-deg.

Cross rods in the conveyor are removable, making it possible to load and unload the cross rods while they are off the conveyor, and to space them at the different intervals required by steering columns of various lengths.

The dipping tank and oven are enclosed in a sheet-metal hous-

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Commission men calling on the industrial trade to represent long established manufacturer of abrasive materials. Address IF-175, care INDUSTRIAL FINISHING.

SALESMAN

We have an opening for an experienced man to sell the furniture and industrial trade. The Forbes Varnish Company, Cleveland, Ohio.

ing. Work goes into and comes out of the equipment perfectly dry. This feature does away with the necessity of installing it in a completely dust-proof room.

Although our oven is the first of its kind ever built, the design was endorsed by engineers of the Detroit Edison Co. and the Mechanical Handling Systems.—John P. Moran.

Note: The above article is made up of excerpts from the report of a special investigation made by H. P. Gould Co., Chicago, for Kirk & Blum Mfg. Co., (Cincinnati, Ohio) who supplied the new electric oven equipment now in service in The Gemmer Mfg. Co.'s plant, Detroit, Mich.

Finishing Textile Machinery

I have had success with the following finishing schedule for textile machinery:

1—Coat of iron filler.
2—Coat of iron filler.
3—Sanded down smooth.
4—Coat of metal surfacer, or thin coat of orange shellac.
5—Finishing coat of machine enamel.—J. H. C. N.

New Lacquer Enamel Color Card Free

The G. J. Nikolas & Co. Inc., 1229 Van Buren St., Chicago, has just issued a new color card on which is presented 70 labeled colors in lacquer enamels. The card is so nicely made up and artistically arranged that it is worth framing.

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